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Original article

Comparison of posttraumatic stress disorder symptom structure models in Black/African American and European American patients receiving public mental health services☆

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ABSTRACT

Prior studies found that Black/African Americans have more trauma exposure and higher PTSD rates than their European American counterparts but less professional mental health service utilization. Other studies find underdiagnosis of PTSD in Black/African Americans with SMI, perhaps because of a failure to use culturally valid diagnostic tools. To determine whether the *Posttraumatic Stress Disorder Checklist* (PCL-5) measures PTSD similarly in Black/African American and European Americans with serious mental illness (SMI; i.e., schizophrenia, bipolar, treatment-resistant depression), we examined the PTSD symptom factor structure based on the PCL-5 responses of 343 patients (195 Black/African Americans and 148 European Americans) with SMI receiving public mental health services in three Northeastern states. The best-fitting model was Armour's 7-factor model, with strong support for the DSM-5 4-factor model. The PTSD factor structure was invariant between Black/African American and European American groups. Symptom cluster co-occurrence did not differ by ethnicity, further affirming measurement invariance. Overall, findings support the use of the PCL-5 for PTSD screening for both Black/African American and European American patients with SMI receiving public mental health services and for the cross-cultural phenotypic consistency of PTSD.

1. Introduction

African or "Black" Americans are a diverse and increasingly diversifying group, comprising approximately 12.4% of the United States population (Jones et al., 2021). Despite being a minority group, research regularly finds that people identifying as "Black" or "African American" have more than their share of exposure to racial discrimination (Holloway et al., 2023; Lincoln et al., 2022; Nguyen et al., 2018; Mekawi et al., 2020; Moshirian et al., 2025; Su et al., 2021) and potentially traumatic events such as adverse childhood experiences, domestic violence, and sexual and physical abuse (Felitti et al., 1998; Gran-Ruaz et al., 2022; Maguire-Jack et al., 2020; Weathers et al., 2018). In order to maintain consistency in description, this study utilizes 'Black/African Americans' to refer to the population of focus. The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; APA, 2013) recognizes that such events increase the risk for developing posttraumatic stress disorder (PTSD), characterized by symptoms falling into clusters of re-experiencing, avoidance, negative mood and cognition changes, and heightened arousal. The DSM-5 further defines traumatic events as requiring an actual or threatened death, serious injury, or sexual violence (APA, 2013). Racial discrimination increases the risk of PTSD (Mekawi et al., 2020; Sibrava et al., 2019). Studies using data from

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the National Survey of American Life show that direct and indirect discrimination are linked to psychotic symptoms and contribute to racial trauma among Black/African Americans (Pérez Benítez et al., 2014; Gran-Ruaz et al., 2022; Oh et al., 2023; Comas-Diaz et al., 2019). It is not surprising, therefore, that Black/African Americans have higher rates of PTSD than many other racial groups (Koo et al., 2016; Roberts et al., 2011; Sibrava et al., 2019; Steenkamp et al., 2017).

What may be more surprising is that Black/African Americans are less likely to seek professional mental health services for PTSD (McLaughlin et al., 2019; Roberts et al., 2011), and that Black/African American veterans are less likely to receive evidence-based PTSD treatments after initiating mental health care (Holder et al., 2020) than their European American or "White" counterparts. Black/African Americans reported lower levels of mental health care utilization when experiencing psychosis-like experiences (Petti et al., 2023). Furthermore, Penderson et al. (2023) found that among Black/African American adults, higher specific knowledge of mental health conditions was associated with 26% increase of the likelihood of seeking treatment, indicating that disparities in seeking professional services have remained consistent over time, due to not only cultural and structural barriers but also differences in specific mental health knowledge. Explanations for this phenomenon can be understood in terms of cultural norms, structural racism, and intersectionality theory. Cultural norms stigmatize seeking mental health care and emphasize either exhibiting strength or relying on spiritual and/or familial support (Gran-Ruaz et al., 2022; Jimenez et al., 2022; Ward and Heidrich, 2009). Systemic inequities, on the other hand, create multiple barriers to high-quality, evidence-based mental health care among Black/African Americans. These barriers include limited health insurance coverage (Artiga et al., 2020; Keisler-Starkey and Bunch, 2020; Summer et al., 2021), access to Black/African American mental health providers (Ajluni and Michalopoulou, 2025; Kaiser Family Foundation, 2023), and options for culturally responsive care (Kaiser Family Foundation, 2023; Summers et al., 2021).

Systemic bias may also translate into explicit or implicit provider bias (Kaiser Family Foundation, 2023; Yearby et al., 2022). Intersectionality theory (Crenshaw, 1989) emphasizes how cultural identity and intersecting forms of oppression shape mental health experiences including interacting with the mental health care system. Uninformed or biased clinicians may be more likely to overlook and underdiagnose PTSD in Black/African American patients. For example, one study found that a Black/African American community clinic sample was diagnosed with a 6% PTSD rate when their actual PTSD rate (as confirmed by structured clinical interview) was closer to 40% (Schwartz et al, 2005b). Underdiagnosis of PTSD may be especially likely to occur when patients have comorbid serious mental illnesses (SMI) such as schizophrenia, bipolar disorder, or treatment-resistant depression (Author et al., 2023). For example, psychotic symptoms may complicate the detection of actual traumatic or discriminatory experiences (Oh et al., 2023; Comas-Diaz et al., 2019). Estimates suggest that rates of PTSD in the SMI population may be as high as 40% but medical records find PTSD rates as low as 0% (Author et al., 2013; Author et al., 2022a; Zammit et al., 2018). These issues may be exacerbated for Black/African American patients who are often misdiagnosed with psychotic disorders rather than more appropriate mood or anxiety disorders (Gara et al., 2019). Schwartz et al. (2005b) found that of Black/African American patients who should have been diagnosed with PTSD, 46% were diagnosed with a psychotic disorder. Another study found in a sample of Black/African American patients with SMI who all had probable PTSD, the detection rate of PTSD was only 18.3%, indicating an elevated risk for underdetection of suspected PTSD diagnosis (Author et al., 2023).

Given this, it appears that community clinicians need PTSD assessment tools that can efficiently and accurately detect probable PTSD, perhaps especially in their Black/African American patients with SMI. Furthermore, given the lack of racial diversity and possible cultural competence in many community mental health care settings, it would be especially beneficial to have assessment methods that are not fully dependent on the cultural sensitivity of the assessing clinician. The *Posttraumatic Stress Disorder Checklist (PCL-5)* is a well-established and widely-used self-report measure of DSM-5 PTSD symptoms that has shown strong concurrent validity with structured interview diagnoses for detecting PTSD. However, the question remains whether the PCL-5 is equally valid for screening PTSD in both Black/African American and European American patient groups? This question has rarely been answered but must be addressed to ensure equitable access and culturally congruent care for Black/African American trauma survivors to feel confident entering the care of public mental health services.

1.1. The factor structure of posttraumatic stress disorder

The *PCL-5* mirrors the *DSM-5 PTSD* diagnostic criteria with separate items for each potential PTSD symptom. PCL-5 item responses collected from a large sample of patients can be examined statistically to reveal the factors (i.e., clusters of symptoms) underlying the broader PTSD diagnostic construct. Different factor structures have been proposed and empirically tested for PTSD (see Appendix, Table 1a). Though the DSM-5 claims a 4-factor model consisting of re-experiencing, avoidance, negative alterations in mood and cognition, and alterations in arousal and reactivity (American Psychiatric Association, 2013), some data support an alternative 4-factor "Dysphoria" Model, originally proposed by Simms et al. (2002), composed of intrusions, avoidance, dysphoria, and hypervigilance (Eddinger and McDevitt-Murphy, 2017). Other data support 6-factor PTSD models. One of these, the "Anhedonia Model" (Liu et al., 2014) divides symptoms into intrusions, avoidance, negative affect, anhedonia, dysphoric arousal, and anxious arousal while the other "Externalizing Behaviors Model" (Tsai, 2015) organizes the

Table 1
Demographic/ clinical characteristics of participants receiving public mental health services.

	Black/African American (n=195)		European American (n=148)		χ2	*P*
	N	%	N	%		
Gender					.11	.75
Male	97	49.7	71	48		
Female	98	50.3	77	52		
Primary Diagnosis					26.31	<.001
Schizophrenia/ Schizoaffective	36	18.5	27	18.2		
MDD	34	17.4	37	25		
Bipolar	26	13.3	42	28.4		
Anxiety/OCD/PTSD/ Other	13	6.7	12	8.1		
Missing	86	44.1	30	20.3		
PCL-5 ≥ 33	118	60.5	92	62.2	.10	.76
	M	SD	M	SD	t	*P*
Age	46.92	12.24	47.21	12.89	-.21	.83
Total TLEQ	6.95	3.87	5.95	3.24	2.56	.01
PCL-5	37.33	20.30	39.18	19.81	-.84	.40
DSM5 4-factor						
Re-Experiencing	15.02	5.94	14.99	5.64	.04	.97
Avoidance	6.42	2.52	6.42	2.52	-1.12	.26
Negative Mood/ Cognition	19.62	7.81	20.77	8.07	-1.33	.18
Hyperarousal	16.46	6.50	16.78	6.29	-.46	.65
Armour's 7-factor						
Re-Experiencing	10.05	5.92	10.03	5.61	.03	.98
Avoidance	4.14	2.53	4.44	2.49	-1.09	.28
Negative Affect	7.13	4.60	7.90	4.75	-1.51	.13
Anhedonia	5.55	3.78	6.00	3.88	-1.08	.28
Externalizing Behaviors	2.70	2.56	2.64	2.35	.25	.80
Anxious Arousal	3.86	2.55	3.99	2.52	-.49	.62
Dysphoric Arousal	3.93	2.61	4.18	2.55	-.90	.37

Note. TLEQ = Traumatic Life Events Questionnaire; PCL-5 = PTSD Checklist for DSM-5

symptoms into reexperiencing, avoidance, emotional numbing, externalizing behaviors, anxious arousal, and dysphoric arousal. Finally, a 7-factor "Hybrid Model," proposed by Armour et al. (2015), views PTSD as consisting of re-experiencing, avoidance, negative affect, anhedonia, externalizing behaviors, and anxious and dysphoric arousal symptom clusters. Several studies have compared the fitness of these various PTSD symptom models (See Table 1b in Appendix). Though adequate fit was shown for all five models, Armour's 7-factor hybrid model seemed to achieve the best overall fit.

Many of these studies failed to specify the racial composition of their samples, among the few that did, they rarely asked whether these PTSD models are similar for different racial groups. A few studies have examined racial differences in DSM-IV PTSD factor structure. For example, Author et al. (2024) concluded factor invariance between European American and Black/African American groups for DSM-IV PTSD structure as measured by the PCL-4. Overstreet et al. (2023) compared DSM-IV PTSD symptom models in a sample of 279,897 military veterans from the Million Veteran Program (Gaziano et al., 2016) placed into genetic ancestry groups (i.e., European, African, admixed American, and East Asian) using DNA data. Their results supported the five-factor "Dysphoric Arousal" model that organized symptoms into re-experiencing, avoidance, numbing, dysphoric arousal, and anxious arousal symptoms and this model fit equally across all ancestry groups, suggesting that Black/African Americans may not differ from these other groups in DSM-IV PTSD factor structure. Yet, it is important to recognize that the ancestry groups may not be equivalent to self-identified racial groups. While it is tempting to assume that genetic grouping of participants into racial groups is scientifically superior to relying on self-report, it is important to remember that virtually all of the foundational science linking Black/African American race to PTSD to health disparities (and the U.S. Census) is based on self-identified race. Thus, one could argue that findings based on self-identified race may be more relevant in making real world clinical decisions. Moreover, neither of these studies speak directly to the current DSM-5 definition of PTSD which includes 20 symptoms (rather than the 17 symptoms defining DSM-IV PTSD).

Though psychometric properties of PCL-5 have been investigated in a Black/African American veteran sample (Patrick et al., 2024), only internal consistency, convergent validity, and diagnostic utility were discussed. Research on the PCL-5 factor structure among Black/African Americans with SMI in the public mental health sector is lacking.

1.2. The present study

This study aims to contribute to existing literature on the factor structure of PTSD symptoms measured with the PCL-5 by examining the factor structure of PTSD in Black/African American patients with SMI receiving public mental health services. The literature collectively suggests the need for culturally appropriate PTSD screening to facilitate the proper recognition of PTSD in these patients (Author et al., 2023). Based on Overstreet et al.'s (2023) findings, we expected to find factor invariance in the DSM-5 PTSD symptom structure between self-identified, Black/African Americans and self-identified European American public mental health patients.

2. Method

2.1. Participants

This study involved 195 Black/African American and 148 European American participants who were screened for eligibility for a randomized controlled trial (RCT) comparing cognitive behavioral therapy (CBT) for PTSD with treatment as usual (TAU) within community mental health agencies serving individuals with SMI located in three Northeastern states (Author et al., 2022b) within urban, suburban, and rural communities. Services at these agencies included: partial hospitalization, medication management, substance abuse counseling, peer support, supported housing, assertive community treatment, and case management. The sample was not pre-selected for probable PTSD but included a broad range of PTSD symptoms.

To participate in the screening, inclusion criteria included: currently receiving services at the agency where the study was taking place; interested in being screened. Exclusion criteria were gross psychosis or acute suicidality, as reported to or determined by the interviewer. The screening interview was discontinued if participants exhibited signs of disorientation, active hallucinations (e.g., speaking to themselves), or expressed overt suicidality (i.e., plans or intent) during the interview. The study was approved by the university's Institutional Review Board.

2.2. Measures

Race. Following the convention of the United States Census and most peer-reviewed research on racial differences in PTSD, participant race was assessed via self-report. Participants were able to self-identify as belonging to any of the following racial groups: Black/African American; White (non-Hispanic); Hispanic; American Indian/Alaska Native; Asian/Pacific Islander; Other. The present study was limited to participants who self-identified as either "Black/African American" or "White (non-Hispanic)".

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) is a 16-item abbreviated version that was used to assess lifetime trauma history using questions corresponding to DSM-IV Criterion A for PTSD. Respondents are asked whether they have ever experienced specific traumatic events using a binary (yes/no) format. The TLEQ has demonstrated excellent psychometric properties, including over 90% agreement on trauma exposure, 91.7% agreement for trauma appraisals, and strong test–retest correlations for event frequency (.76 to .91). This abbreviated version of the TLEQ has been successfully used in prior research to screen persons with SMI for trauma exposure (Author et al., 2008).

The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) is a 20-item self-report scale that inquiries about each of the 20 DSM-5 PTSD symptoms. It can be used to screen individuals for PTSD and to make a provisional PTSD diagnosis. The self-report rating scale is 0–4 for each symptom, reflecting descriptors of the following: "Not at all", "A little bit", "Moderately", "Quite a bit" and "Extremely". Studies have recommended using a cutoff score of 33 as an indicator of probable PTSD (PCL-5 $\geq$ 33; Wortmann et al., 2016; Bovin et al., 2016). Among veterans and trauma-exposed college students, internal consistency has been reported at $\alpha = .96$ and $\alpha = .94$, respectively, with test–retest reliability ranging from $r = .82$ to $r = .84$ (Blevins et al., 2015; Bovin et al., 2016). Convergent validity has been established between PCL-5 scores and clinician-administered CAPS-5 diagnoses, with correlations around $r = .66$ (Weathers et al., 2013). In our current sample, internal consistency was high ($\alpha = .95$). Race-specific psychometrics was reported by Mekawi et al. (2022), who applied Item Response Theory and demonstrated high internal consistency for the PCL-5 ($\alpha = .96$) in 307 Black/African American adult participants.

2.3. Procedures

Participants were drawn from the screening dataset ($N = 534$) of a larger randomized controlled trial (RCT) that evaluated PTSD across 10 supported employment programs in Northeastern U.S. (Author et al., 2022b). Recruitment occurred through these supported employment programs embedded in community mental health agencies serving individuals with SMI.

Site staff and study personnel were trained to conduct PTSD screening at their respective programs. All patients at the recruitment sites were notified of the opportunity to be screened for PTSD and the dates that study staff would conduct screenings at their agencies.

Interested patients provided consent to be contacted and met with

study personnel or site staff who explained the screening process. If the patient agreed to be screened for PTSD, study personnel and/or site staff conducted screening for PTSD using TLEQ (Kubany et al., 2000) and PCL-5 (Weathers et al., 2013) and used a script to introduce screening (Author et al., 2022a, 2022b). Participants first completed TLEQ and then the PCL-5, with the most distressing event. Staff were available if patients had questions or became distressed and provided debriefing. About five individuals needed to speak with staff after completing the screening. Participants were paid $10 for completing the screening.

While an exact response rate was not ascertained, the recruitment process was consistent with standard practice in community mental health service settings detailed in prior work (Author et al., 2022a). An estimated response rate of 70% was reported among patients with positive PTSD screens who agreed to be contacted in Author et al., 2022a. Some degree of selection bias in recruitment is possible, favoring individuals more open to discussing trauma. Nevertheless, the sample reflected the demographic and diagnostic diversity of the patients served at these sites.

2.4. Data analysis

To address the tightened Criterion A for the DSM-5, which changed the index trauma (i.e., the most traumatic event used to assess the severity of PTSD symptoms on the PCL-5) of sudden death to the experience of the violent or accidental death of a loved one, cases were excluded if the index trauma was a death that was unspecified as to whether it was accidental or violent (i.e., death of a father, death of a son, death of a brother), regardless of other trauma exposure. We also excluded cases that had a TLEQ score of 0, indicating no trauma exposure. Out of 534 cases for the screening dataset, 40 cases were removed for having a TLEQ of 0, resulting in a total sample of 494. Out of the 494 cases, 81 unspecified cases of the death of a loved one were removed to adhere to the DSM-5 Criterion A of the death being violent or accidental. As a result, the total sample was 413, which included 195 Black/African American, 148 European American participants, and 10 participants of Hispanic, Asian, and other ethnicities. SPSS 29 was used to enter and clean data. There were 8,260 data points on PCL-5, in which 81 (0.98%) data points were missing data. Missing data were included in the analysis by using Full Information Maximum Likelihood (FIML) in Mplus software. Pairwise deletion was used in the correlational analysis.

Models were examined through confirmatory factor analysis (CFA), using MPlus 8.7, with maximum likelihood estimation with robust standard errors (i.e. MLR estimator) to determine the best fitting model for our sample. Acceptable models should have CFI close to .95, TLI close to .95, RMSEAs $\leq$ .08, SRMR $\leq$ 0.08, and excellent models should have RMSEAs $\leq$.06 (the lower the better), with CFI and TLI $\geq$ .95 (Hu and Bentler, 1999). When comparing across models, the Akaike Information Criterion (AIC; Akaike, 1987), BIC (Bayesian Information Criterion; Schwarz, 1978), and sample-size adjusted BIC (SABIC; Sclove, 1987) are commonly used for model selection for models, with lower values suggesting better fit. A difference of 10 in AIC values indicates better model fit (Hooper et al., 2008).

Measurement invariance was assessed using multi-group CFA conducted by MPlus 8.7 to test for factor structure equivalence between racial groups. Self-identified/self-reported race/ethnicity was used as a grouping variable for testing measurement invariance instead of genotype data from blood samples, as used in Million Veteran Program study (Gaziano et al., 2016). Configural invariance determined whether the overall model structure could be considered equivalent across groups. Metric invariance tested if both groups contributed similar regression weights to the latent construct. Scalar invariance determined if both groups had equivalent intercept values in the latent construct on the observed variable of item scores, allowing for meaningful comparison of latent means (Gregorich, 2006; Meredith 1993). Chen (2007) suggested more stringent criteria when N>300, including a criterion change $<$ .01 in CFI paired with changes of $<$ .015 in RMSEA and $<$ .03 in SRMR for metric invariance; and a change of $<$ .01 in CFI supplemented with a change of $<$ .015 in RMSEA and $<$ .01 in SRMR for scalar invariance. Fisher's Z test was used to assess whether the correlations between latent factors differed significantly between the two racial groups to further examine invariance. We also compared the two groups to examine differences in trauma exposure and PTSD symptom severity by race.

3. Results

3.1. Sample characteristics

This analytic sample focused on Black/African American and European American participants, which included 343 patients (195 Black/African American and 148 European American patients) receiving public mental health services (Table 1). In both groups, approximately half of the participants were male, with a mean age of 47. The average PCL-5 score was 37 in the Black/African American sample and 39 in the European American group. Among Black/African American participants, the most common self-reported diagnosis was schizophrenia/schizoaffective disorder, followed by MDD, bipolar disorder, and Anxiety/OCD/PTSD/Other. Among European American participants, the most common self-reported diagnosis was bipolar disorder, followed by MDD, schizophrenia/schizoaffective disorder, and Anxiety/OCD/PTSD/Other.

3.2. Confirmatory factor analysis model fit indexes

Confirmatory Factor Analysis (CFA) was first used to evaluate the degree to which the screening sample fit the six PTSD models supported by previous literature. Model fit was examined using the total sample, combining Black/African American and European American participants. The analyses indicated good to excellent model fit for all models for the total sample (CFIs $>$ 0.93, TLIs $>$ 0.92, RMSEAs = 0.03-0.07; see Table 2). Findings are similar to previous findings which included a larger sample of clients from diverse backgrounds utilizing community mental health services (N=536; Author et al., 2022). Moreover, all six models had excellent fit across the Black/African American and European American groups (CFIs $\geq$ .95, TLIs $>$ .95, RMSEAs $<$ .06, see Table 2). Based on Table 2, the 6-factor Anhedonia model (Liu, 2014) demonstrated the greatest parsimony, while the Hybrid 7-Factor model (Armour, 2015) showed the best overall fit. These patterns were consistent across both Black/African American and European American groups, indicating no meaningful differences in PTSD symptom structure by race.

3.3. Testing measurement invariance of PCL-5 between Black/African and European Americans

We next used Mplus version 8.7, and conducted multi-group CFA, to examine factor invariance in PTSD factor structure for the six models in the two racial groups (Table 3). Following Chen (2007), changes in CFI and RMSEA values were used to determine between-model statistical significance; ΔCFI $<$ .010 and ΔRMSEA $<$ .015, and ΔSRMR $<$ .030 for metric invariance, and ΔCFI $<$0.01 supplemented with ΔRMSEA $<$ .015 and ΔSRMR $<$ .01 for scalar invariance. Chi-square difference tests between the configural and metric models were not significant across all models, suggesting metric invariance. However, chi-square tests comparing the metric and scalar models were significant in all models, which could suggest a lack of scalar invariance. Because the chi-square test is known to be sensitive to sample size and may overestimate differences, using Chen's (2007) recommended guidelines evaluating scalar invariance for sample sizes greater than 300 —ΔCFI $\leq$ .010, ΔRMSEA $\leq$ .015, and ΔSRMR $\leq$ .010—all six models met the threshold for scalar invariance. In summary, for all invariance testing on all models, the model fitting indices were satisfactory (e.g., CFI, TLI $>$ .90,

Table 2
Fit indices for six models of PTSD among the Black/African American and European American patients receiving public mental health services.

Model	χ2	df	p	χ2/DF	AIC	BIC	SABIC	TLI	CFI	RMSEA	RMSEA 90% CI	SRMR
Black/African American Sample (n=195)												
King's (1998) Numbing 4-factor	289.10	164	.00	1.76	11547	11763	11554	.92	.93	.06	.05-.07	.05
Simms' (2002) Dysphoria 4-factor	295.87	164	.00	1.80	11555	11772	11562	.92	.93	.06	.05-.08	.05
Elhai.'s (2011) Dysphoric Arousal 5-factor	273.59	160	.00	1.71	11534	11763	11542	.93	.94	.06	.05-.07	.05
Liu's (2014) Anhedonia 6-factor	240.78	155	.00	1.55	11500	11745	11507	.94	.95	.05	.04-.07	.04
Tsai's (2015) Externalizing Behaviors 6-factor	250.45	155	.00	1.62	11514	11760	11522	.94	.95	.06	.04-.07	.04
Armour's (2015) hybrid 7-factor	217.82	149	.00	1.46	11482	11747	11490	.95	.96	.05	.03-.06	.04
European American Sample (n=148)												
King's (1998) Numbing 4-factor	215.95	164	.00	1.32	8822	9019	8810	.96	.96	.05	.03-.06	.05
Simms' (2002) Dysphoria 4-factor	218.24	164	.00	1.33	8824	9022	8813	.96	.96	.05	.03-.06	.05
Elhai.'s (2011) Dysphoric Arousal 5-factor	199.22	160	.02	1.25	8809	9019	8797	.97	.97	.04	.02-.06	.05
Liu's (2014) Anhedonia 6-factor	167.07	155	.24	1.08	8779	9004	8766	.99	.99	.02	.00-.05	.04
Tsai's (2015) Externalizing Behaviors 6-factor	186.62	155	.04	1.20	8804	9028	8791	.97	.98	.04	.01-.06	.04
Armour's (2015) hybrid 7-factor	153.63	149	.38	1.03	8875	9018	8762	.99	.99	.01	.00-.04	.04
Total Sample (N=343)												
King's (1998) Numbing 4-factor	376.88	184	.00	2.04	20804	21065	20850	.93	.94	.06	.05-.06	.04
Simms' (2002) Dysphoria 4-factor	390.99	184	.00	2.12	20821	21082	20866	.93	.94	.06	.05-.07	.05
Elhai.'s (2011) Dysphoric Arousal 5-factor	352.62	180	.00	2.00	20781	21057	20829	.94	.95	.05	.05-.06	.04
Liu's (2014) Anhedonia 6-factor	290.24	175	.00	1.66	20711	21007	20762	.96	.96	.04	.04-.05	.04
Tsai's (2015) Externalizing Behaviors 6-factor	317.19	175	.00	1.81	20746	21042	20798	.95	.96	.05	.04-.06	.04
Armour's (2015) hybrid 7-factor	254.64	169	.00	1.51	20679	20997	20734	.97	.97	.04	.03-.05	.03

Note. χ2 = diagonally weighted least squares chi-square; df = degrees of freedom; AIC= Akaike information criterion; BIC= Bayesian information criterion; SABIC= Sample adjusted BIC; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standard Root Mean Square Residual.

Table 3
Measurement invariance in Black/African Americans and European Americans for the DSM-5 4-factor model and Armour's 7-factor model (AA=195 EA=148) invariance model.

	χ2	Δχ2	Δdf	p	CFI	ΔCFI	TLI	RMSEA	ΔRMSEA	SRMR	ΔSRMR	SABIC
DSM-5 4-factor Model												
Configural Invariance	508.27	–	–	–	.94	–	.93	.057	–	.049	–	20457
Metric Invariance	524.95	11.929	16	0.749	.94	.000	.94	.055	-.003	.052	.003	20423
Scalar Invariance	554.39	30.325	16	0.016	.94	-.004	.94	.056	.001	.053	.001	20412
Simms' Dysphoria 4-factor model												
Configural Invariance	517.46	–	–	–	.94	–	.93	.058	–	.050	–	20468
Metric Invariance	536.35	15.235	16	0.508	.94	-.001	.93	.057	-.001	.052	.002	20437
Scalar Invariance	566.46	31.048	16	0.013	.94	-.004	.93	.058	.001	.053	.001	20426
Elhai's 5-factor Model												
Configural Invariance	476.11	–	–	–	.95	–	.942	.053	–	.047	–	20436
Metric Invariance	493.08	13.99	15	0.536	.95	-.001	.944	.052	-.001	.05	.003	20407
Scalar Invariance	523.41	31.819	15	0.007	.95	-.005	.942	.054	.002	.051	.001	20400
Liu's (2014) 6-factor model												
Configural Invariance	411.19	–	–	–	.97	–	.961	.044	–	.042	–	20378
Metric Invariance	426.97	14.284	14	0.429	.97	-.001	.963	.043	-.001	.045	.003	20352
Scalar Invariance	457.08	32.074	14	0.004	.96	-.005	.958	.045	.002	.046	.001	20348
Tsai's 6-factor model												
Configural Invariance	439.93	–	–	–	.96	–	.951	.049	–	.044	–	20418
Metric Invariance	454.12	10.916	14	0.693	.96	.000	.953	.048	-.001	.046	.002	20389
Scalar Invariance	481.75	29.138	14	0.01	.96	-.005	.95	.050	.002	.047	.001	20381
Armour's 7-factor Model												
Configural Invariance	374.30	–	–	–	.98	–	.97	.039	–	.038	–	20365
Metric Invariance	387.11	10.856	13	0.623	.98	.000	.971	.038	-.001	.040	.002	20339
Scalar Invariance	414.56	29.452	13	0.006	.97	-.004	.967	.040	.002	.042	.002	

Note. Δ = absolute difference; χ2 = diagonally weighted least squares chi-square; df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standard Root Mean Square Residual; *p < .001; Following Chen (2007), ΔCFI < .01 supplemented with ΔRMSEA < .015 and ΔSRMR < .03 for metric invariance; and ΔCFI < 0.01 supplemented with ΔRMSEA < .015 and ΔSRMR < .01 for scalar invariance (Chen, 2007).

and RMSEA, SRMR < 0.05, ΔCFI ≤ .01 and ΔRMSEA and ΔSRMR< .001) for metric and scalar invariance. Findings together suggest that the six models including the DSM-5 4-factor, Elhai's 5-factor, and Armour's 7-factor models had configural, metric, and scalar invariance, providing strong support for all models (Table 3). However, Simms' 4-factor model had the lowest fit indices in the measurement invariance testing (CFI =.94, TLI=.93, RMSEA=.06). Armour's 7-factor model had the highest fit indices in the measurement invariance testing (CFI=.98, TLI=.97, RMSEA=.04). The DSM-5 4-factor model had similar fit indices, however, was more parsimonious compared to the 5-factor, 6-factor, and 7-factor models. Overall, results suggested that the PCL-5 factor structure was invariant across Black/African Americans and European Americans for the 4-factor models, 5-factor model, 6-factor models, and the 7-factor model (see Table 3). The 7-factor model emerged as the best-fitting model; however, the DSM-5 4-factor model was the most parsimonious model, with excellent fit and measurement invariance.

We compared the correlations between subscales in the DSM-5 4-factor model and Armour's 7-factor model (see Appendix, Table 2) using Fisher's Z-test. Correlations between subscales did not differ significantly between Black/African Americans and European Americans for both models. This indicated that the co-occurrence of symptom clusters did not differ as a function of ethnicity, which contributes to invariance

in measurement for these two groups.

3.4. Racial comparisons in trauma exposure and PTSD symptom severity

Having demonstrated factorial invariance in PTSD between Black/African American and European American respondents, we then compared these two groups on PTSD symptoms. First, we compared trauma exposure (see Appendix, Table 1c). Among Black/African Americans patients, commonly experienced traumas were sudden death of a loved one (77%), domestic violence (61%), and witnessing domestic violence in childhood (59%). Among European Americans, commonly reported traumas were sudden death of a loved one (69%), threatened death or injury (62%), and domestic violence (48%). On average, the total number of types of traumatic events experienced by participants was 6.55 on average (6.95 vs. 5.95 for Black/African Americans and European Americans, respectively, $P < .01$). Black/African Americans reported higher rates of sudden death, robbery with weapon, witnessing stranger assault, threatened death or injury, witnessing domestic violence as a child, domestic violence, and childhood sexual abuse. Black/African Americans had lower scores on the Negative Mood/Cognition subscale in DSM-5 model and on the Negative Affect and Dysphoric Arousal subscales in Armour's 7-factor model than European Americans ($P \leq .05$). There were no statistically significant differences in the other symptom clusters of the DSM-5 model or in the other symptoms of Armour's model (see Table 1).

3.5. Sensitivity check

While the exclusion of cases involving the unspecified death of a loved one was necessary to maintain consistency with DSM-5 Criterion A, it may have introduced bias by omitting individuals with meaningful trauma exposure that could have contributed to PTSD symptoms. As a sensitivity check, we repeated all analyses by including the cases from the screening sample who had reported an unspecified death as their index trauma. The pattern of results remained consistent.

4. Discussion

This study utilized measurement invariance analyses to examine whether there were ethnoracial differences in DSM-5 PTSD symptom presentation between Black/African American and European American public mental health patients with SMI. Our results are consistent with previous multi-group confirmatory factor analyses demonstrating cross-racial invariance of the five-factor DSM-IV PTSD model (Overstreet et al., 2023). We extend their results by showing evidence of factorial invariance between self-identified Black/African American and European American patients for 4-factor, 5-factor, and 7-factor models of the current DSM-5 definition of PTSD operationalized by the PCL-5. To our knowledge, this is among the first studies to examine racial differences in DSM-5 PTSD factor structure within a sample of SMI patients receiving public mental health services. This focus is important given the limited psychometric research with such patients (Myers and Ziv, 2016; Mekawi et al., 2022).

The invariance results justified comparing our Black/African American and European American groups in their reported PTSD symptom severity. To distinguish between true group differences in PTSD symptoms and differences that may arise from measurement bias, this study established configural, metric, and scalar invariance between Black/African American and European American groups. Establishing scalar invariance ensures that differences in item intercepts and factor loadings do not confound group comparisons (Chen, 2007; Widaman and Reise, 1997). This indicated that the PCL-5 measures the same latent PTSD construct equivalently in both racial groups. With such measurement biases ruled out, this study found group-level differences in specific symptom domains. Specifically, Black/African Americans had lower scores in the Negative Mood/Cognition and Dysphoric Arousal clusters. These findings differed from what has been reported elsewhere. Coleman et al. (2019) found no differences in total PTSD symptoms and in three of the four PTSD symptom clusters between European Americans and Black/African Americans, but found elevated reexperiencing symptoms among Black/African Americans. On the other hand, some of our findings about racial group differences in trauma exposure echoed what has been reported by other researchers. Specifically, like others (Author et al., 2013; Roberts et al., 2011; Weathers et al., 2018), we found Black/African American participants reported higher rates of witnessing domestic violence as a child, childhood sexual abuse and physical abuse, and witnessing stranger assault, compared to European Americans.

Our finding of more trauma exposure but reduced levels of some PTSD symptoms could be explained by resilience commonly observed in Black/African American groups. Many Black/African American cultures draw on rich cultural, spiritual, and communal resources that foster resilience and well-being (Douglas et al., 2024) and serve as important sources of strength, promoting healing and adaptive coping in ways that are meaningful in addressing the very adversities highlighted in this article (Utsey et al., 2000; Neighbors et al., 1983; Mattis, 2002). Black/African Americans may protect themselves from dysphoria and negative cognitions by recognizing that some of their distress comes from systemic oppression rather than personal failures. This possibility should be pursued in future research.

Beyond identifying these differences in trauma exposure and symptom severity, arguably, the greatest value of our work is in its potential to better identify PTSD in Black/African American patients with SMI presenting in community mental health settings. Previous research has shown that PTSD is often under-detected or misdiagnosed in Black/African Americans in such settings (Schwartz et al., 2005; Author et al., 2023), highlighting the need for culturally appropriate screening tools that can be used in these busy and resource-constrained settings. PCL-5 scores, in particular, have been found to strongly predict clinician-confirmed PTSD diagnoses (Bovin et al., 2016; Wortmann et al., 2016). Our finding of factor invariance between Black/African American and European American SMI patients, supports the fair use of the PCL-5 to identify potential PTSD in both of these groups.

4.1. Strengths and limitations

A key limitation of this study is its use of a volunteer sample. Because we were unable to collect data on individuals who chose not to volunteer, we do not know how well our achieved sample represents the broader population of interest, thereby limiting our ability to assess potential selection bias and its influence on generalizability of the findings. Another sampling concern is the lack of information and limited sample size to explore subgroup differences among Black/African American and European Americans. We were unable to consider factors such as ethnic heritage, immigration status, regional background, or generational status. Future research should prioritize examining subgroup-specific experiences to better understand their impact on treatment engagement and PTSD symptom expression (Tamir, 2021).

Other limitations occurred in the realm of measurement. We relied on self-reported PTSD symptoms (PCL-5), which may be less valid than clinician-administered interview diagnoses (e.g., CAPS-5). Yet, the former provides a much less time-consuming way to estimate PTSD diagnoses, which is very important in community mental health. Another related issue is that we relied on self-reported race rather than genetic data as in the Million Veteran Program (Gaziano et al., 2016). Given that race in the United States is widely understood as a social construct rather than an objective fact, influenced as much or more by self-perception and the perception of others, it is questionable whether a biological operationalization of race is preferred to our self-identified approach. It is also worth noting that viewing race as a biological concept rather than as a social one has had many undesirable effects in the past including fostering eugenics and promoting pseudoscientific racist theories

(Bryant et al., 2022).

We recognize that the assessment of PTSD and trauma-related symptoms in Black/African Americans could be improved by better incorporating culturally specific interpretations of PTSD symptoms and its complex PTSD variants. Cultural values, trauma narratives, and expressions of distress may shape how PTSD is experienced and reported across ethnoracial groups (Hinton and Lewis-Fernandez, 2011). Arguably, one of the most important potential contributors to PTSD symptoms that was not measured in our study was perceived racism. Previous studies found racial trauma is related to psychiatric symptoms (Gran-Ruaz et al., 2022; Pérez Benítez et al., 2014). Race-based trauma has been generally neglected in the psychodiagnostics process and should be incorporated in future research efforts. This could use qualitative or mixed-methods approaches to explore how culture and racism influences the understanding and expression of PTSD.

While the exclusion of cases involving the unspecified death of a loved one was necessary to maintain consistency with DSM-5 Criterion A, it may have introduced bias by omitting individuals with meaningful trauma exposure that could have contributed to PTSD symptoms. This conservative approach may limit the generalizability of findings and underscores the need for future studies to collect more detailed narrative trauma data to allow for precise coding of index events.

Additionally, the sample did not include other measures that would allow for the examination of convergent and divergent validity of the PCL-5 for Black/African American and European American clients receiving community mental health care. However, prior work has reported evidence supporting the convergent and divergent validity of the PCL-5 in a sample of 132 participants with PTSD recruited from community mental health centers with 42.4% identifying as Black/African American (Author et al., 2022). Finally, the study did not specifically evaluate the ability of the PCL-5 to discriminate individuals meeting versus not meeting PTSD criteria. Future research should examine the discriminative performance of the PCL-5 across racial and ethnic groups to further establish its validity among clients utilizing community mental health services.

Despite these limitations, our focus on a widely-known self-report PTSD symptoms measure (PCL-5) has important practical advantages. Screening and documenting PTSD in patients receiving public mental health services can support trauma-informed care, which might be otherwise overlooked in busy and under-resourced clinical settings. Using the PCL-5 to screen for PTSD is not labor intensive and, based on our results, can detect PTSD in public mental health centers without racial bias between Black/African American and European American patients with SMI. The PCL-5 can therefore be a useful tool in supporting more consistent PTSD detection across groups. Better detection of PTSD has the additional advantage of directing patients to one of several empirically supported treatments that have been shown to bring great relief to trauma survivors (Pole and Rasco, 2024), including those who come from ethnic minority backgrounds (Nemeroff et al., 2018).

5. Conclusion

Overall, our study provides preliminary support for the applicability of DSM-5 PTSD factor structuring in Black/African American patients receiving public mental health services as compared to their European American counterparts. Black/African American patients have been misdiagnosed as depressed when PTSD was shown to be the most appropriate diagnosis (Schwartz et al., 2005b). Having undetected and untreated PTSD can lead to worsening symptoms including psychotic symptoms in some patients (Seow et al., 2016). Outcomes of this study suggest that the PCL-5 captures PTSD symptoms in treatment-seeking Black/African American patients in the public sector. Although PTSD symptom structure was invariant across Black/African American and European American patients, this likely reflects the stability of core PTSD dimensions (i.e., re-experiencing, avoidance, negative mood/-cognition, and hyperarousal) across groups when measured with standardized tools like the PCL-5 (Patrick et al., 2024; Overstreet et al., 2023; Mekawi et al., 2022). However, consistent symptom structure does not imply cultural equivalence in how PTSD is experienced, appraised, or addressed, highlighting the need for future research on cultural meaning-making in diagnosis and care. This study increases the confidence with which extant diagnostic algorithms of PTSD can be applied to Black/African American patients served by public community mental health centers. Doing so simultaneously may contribute both to trauma-informed care and culture-informed care.

Author statement

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Declaration of competing interest

I confirm that the information provided above is accurate to the best of my knowledge and that I have disclosed all potential conflicts of interest related to this work.

Appendix

Appendix Table 1a
Models of PTSD.

Model	DSM-IV	DSM-5	King, 1998	Simms, 2002	Elhai, 2011	Liu, 2014	Tsai, 2015	Armour, 2015
	3-factor	4-factor	4-factor	4-factor	5-factor	6-factor	6-factor	7-factor
PCL-5 Item								
1. Intrusive thoughts	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.
2. Nightmare	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.
3. Flashback	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.
4. Emotional reactivity	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.
5. Physiological reactivity	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.	Reexp.
6. Avoid thoughts	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.
7. Avoid reminders	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.	Avoid.
8. Amnesia	Avoid.	Neg.M	Neg.Cog.	Dysph.	Neg.Cog	Neg.Aff.	Numbing	Neg.Aff.
9. Negativity	-	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Neg.Aff.	Numbing	Neg.Aff.
10. Blame	-	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Neg.Aff.	Numbing	Neg.Aff.
11. Negative affect	Avoid.	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Neg.Aff.	Numbing	Neg.Aff.
12. Lacks interest	Avoid.	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Anhe.	Numbing	Anhe.
13. Feel detached	Avoid.	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Anhe.	Numbing	Anhe.
14. Anhedonia	Avoid.	Neg.M	Neg.Cog	Dysph.	Neg.Cog	Anhe.	Numbing	Anhe.
15. Irritability/aggression	HyperAr.	HyperAr.	HyperAr.	Dysph.	Dysph.Ar.	Dysph.Ar	Ext.Beh.	Ext.Beh.
16. Recklessness	-	HyperAr.	HyperAr.	HyperAr.	Dysph.Ar	Dysph.Ar	Ext.Beh.	Ext.Beh.
17. Hypervigilance	HyperAr.	HyperAr.	HyperAr.	HyperAr.	Anx.Ar.	Anx.Ar	Anx.Ar	Anx.Ar
18. Startle	HyperAr.	HyperAr.	HyperAr.	HyperAr.	Anx.Ar	Anx.Ar	Anx.Ar	Anx.Ar
19. Lack of concentration	HyperAr.	HyperAr.	HyperAr.	Dysph.	Dysph.Ar	Dysph.Ar	Dysph.Ar	Dysph.Ar
20. Insomnia	HyperAr.	HyperAr.	HyperAr.	Dysph.	Dysph.Ar	Dysph.Ar	Dysph.Ar	Dysph.Ar

Note. Reexp.=Reexperiencing; Avoid.=Avoidance; HyperAr.=Hyperarousal; Neg.M=Negative Alterations in Mood and Cognition; Neg.Cog=Negative Cognitions; Dysph.=Dysphoria; Dysph.Ar.=Dysphoric Arousal; Anx.Ar=Anxious Arousal; Neg.Aff.=Negative Affect; Anhe.=Anhedonia; Ext.Beh.=Externalizing Behaviors.

Appendix Table 1b
Literature review of PCL-5 Models for Black/African Americans vs. European Americans.

Study	Sample	N	African American *n*	European American *n*	DSM-5 4-factor King, 1998 CFI	4-factor Simms, 2002 CFI	5-factor, Elhai, 2011 CFI	6-factor Liu, 2014 CFI	6-factor Tsai, 2015 CFI	7-factor Armour, 2015 CFI
Armour, 2015	Veterans	1484	112 (9.7%)	1204 (75.4%)	0.93	0.93	0.94	0.96	0.94	0.96
Armour, 2015	University Students	497			0.97	0.96	0.97	0.99	0.98	0.99
Tsai, 2015	Veterans	1484	Not provided	Not provided	0.92	-	0.93	-	0.94	-
Eddinger, 2017	Veteran	129	60 (48%)	61 (49%)	0.88	0.92	0.89	-	-	-
Eddinger, 2017	College Sample	737	292 (40%)	354 (48%)	0.91	0.95	0.92	-	-	-
Krüger-G., 2017	Clinical Sample	352	Not provided	Not provided	0.89	0.89	-	-	-	-
Contractor, 2018	University Students	191	2 (1%)	186 (97%)	-	0.93	0.94	0.97	0.94	0.98
Lee, 2019	Veterans	380	83 (22%)	261 (69%)	0.95	0.95	0.96	-	0.96	0.97
Ashbaugh, 2016[a]	Undergraduate	838	69 (8%)	484 (58%)	0.91	-	-	0.95	-	0.96
Ashbaugh, 2016[a]	Undergraduate	262	48 (18%)	157 (60%)	0.89	-	-	0.92	-	0.92
Van Praag, 2020[c]	Civilian TBI Patients	495	13 (3%)	461 (93%)	1.00	-	-	1.00	-	1.00
Total		6849	679	3168						

Note. [a]=French version of PCL-5; [b]=Chinese version of PCL-5; [c]=Dutch version of PCL-5; CFI= Comparative Fit Index.

Appendix Table 1c
Events reported on traumatic life events questionnaire by gender and ethnicity.

	Black/African American (n=195)		European American (n=148)			
Life Event	n	%	n	%	x2	P
Car accident	50	25.6	51	34.5	3.15	.076
Other accident	52	27.1	32	26.1	1.34	.247
Warfare/combat	22	11.4	20	13.5	.35	.556
Sudden death	150	76.9	101	68.7	2.90	.089
Robbery with weapon	97	49.7	41	27.7	17.00	<.001
Stranger assault	90	46.2	59	39.9	1.35	.245
Witnessed stranger assault	100	51.3	49	33.1	11.31	<.001

(*continued on next page*)

Appendix Table 1c (*continued*)

	Black/African American (n=195)		European American (n=148)			
Threatened death or injury	106	55.5	91	61.9	1.40	.236
Childhood Physical Abuse	81	42.0	42	28.4	6.71	.010
Witnessed domestic violence in childhood	114	59.1	72	49.0	3.43	.064
Domestic Violence	118	60.5	71	48.3	5.06	.025
Childhood sexual abuse by Older Person	86	44.1	46	31.1	6.03	.014
Childhood sexual abuse by peer	73	37.6	40	27.0	4.27	.039
Adult sexual abuse	59	30.6	42	28.4	.19	.660
Being Stalked	82	42.1	61	41.5	.01	.918
Other distressing events	76	39.0	62	41.9	.30	.585
	M ± SD		M ± SD		t	P
Total TLEQ	6.95±3.87		5.95±3.23		-2.62	0.009

Note. TLEQ = Traumatic Life Events Questionnaire

Appendix Table 2
Correlations between subscales of PTSD models (N=198 for Black/African Americans, N=148 for European Americans).

DSM-5 4-factor Model	Re-Experiencing	Avoidance	Negative Mood/ Cognition	Hyperarousal			
Re-Experiencing	–						
Avoidance	(.67) (.69) P = .74	–					
Negative Mood/Cognition	(.72) (.69) P = .59	(.69) (.61) P = .21	–				
Hyperarousal	(.69) (.72) P= .59	(.57) (.55) P= .79	(.79) (.75) P= .37	–			
Armour's 7-factor Model	Re-Experiencing	Avoidance	Anhedonia	Externalizing Behaviors	Anxious Arousal	Dysphoric Arousal	Negative Affect
Re-Experiencing	–						
Avoidance	(.67) (.69) P= .73	–					
Anhedonia	(.72) (.70) P= .71	(.69) (.61) P=.21	–				
Externalizing Behaviors	(.61) (.57) P=.58	(.57) (.51) P=.44	(.71) (.71) P=1	–			
Anxious Arousal	(.50) (.51) P=.90	(.35) (.35) P=1	(.54) (.57) P=.70	(.60) (.51) P=.23	–		
Dysphoric Arousal	(.61) (.64) P=.65	(.69) (.51) P=.01	(.66) (.60) P=.36	(.63) (.52) P=.13	(.55) (.60) P=.50	–	
Negative Affect	(.62) (.66) P=.54	(.51) (.53) P=.80	(.64) (.67) P=.63	(.64) (.66) P=.76	(.55) (.53) P=.79	(.58) (.60) P=.78	–

Note: For each cell, the first number in parentheses represents the correlation for the African American group (n=195); and the second number in parentheses represents the correlation for the European American group(n=148).

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