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Examining the Psychometric Properties of the PCL-5 in a Black Community Sample using Item Response Theory

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Abstract

Black Americans are more likely to be exposed to certain types of traumatic events and experience posttraumatic stress disorder (PTSD) compared to other racial groups. Consequently, sound assessment of PTSD in this underserved and understudied population is necessary to develop and accurately answer research questions about etiology and intervention efficacy. However, the item-level psychometric properties of one of the most commonly used assessment tools, the PTSD Checklist for *DSM-5* (PCL-5), has yet to be examined among Black Americans. To address this gap, we used item response theory (IRT) to assess item difficulty and discrimination in a sample of Black American adults (n = 307). We employed a graded response model with all 20 items of the PCL-5 loading on to a latent PTSD factor. At clinically significant levels of PTSD, the most discriminating items were flashbacks, inability to experience positive emotions, and nightmares and the least discriminating items were cued emotional distress, diminished interest, and hypervigilance. These results emphasize the importance of flashbacks, inability to experience positive emotions, and nightmares and deemphasize the importance of hypervigilance and sleep difficulties when assessing for clinically significant symptoms of PTSD in Black Americans. Treatment implications include a nuanced approach towards hypervigilance.

Keywords

Item response theory; posttraumatic stress disorder; PCL-5; *DSM-5* ; *ICD-11*

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Black Americans are disproportionally exposed to various types of trauma and experience more chronic and severe posttraumatic stress disorder (PTSD) symptoms compared to other racial groups (Gillespie et al., 2009; Gluck et al., 2021; Roberts et al., 2011; Sibrava et al., 2019). In addition to experiencing traditionally defined Criterion A traumas, Black Americans also experience racial stress and stress related to intersectional identities (e.g., gendered racial microaggressions; Lewis et al., 2017; Lewis & Neville, 2015). Such stressful experiences can worsen certain traumatic stress symptoms as well as the clinical presentation and course of PTSD (Moody & Lewis, 2019; Roberson & Carter, 2021; Sibrava et al., 2019). Consequently, accurate and nuanced assessment of PTSD symptoms in this population that experiences chronic and multilayered stress is critical.

There are mixed findings regarding racial and ethnic differences in PTSD symptom clusters and individual symptoms endorsed. For example, compared to other racial and ethnic groups, Black Americans report lower levels of internal avoidance (Marshall et al., 2009) and higher levels of alterations in arousal/reactivity, avoidance, and intrusions/re-experiencing in some studies (Ortega & Rosenheck, 2000; Coleman et al., 2019), but not in others (Coleman et al., 2019; Koo et al., 2016). One explanation proposed for these differences, when observed, is that Black Americans experience certain symptoms (e.g., hypervigilance) independent of their traumatic experiences with an elevated baseline that then cancels or minimizes the effect of any such trauma-related exacerbation (Ruglass et al., 2020).

Findings in the extant literature suggest that heightened awareness and arousal, which might traditionally be considered akin to hypervigilance as delineated in the *DSM-5* criteria for PTSD, can be adaptive and, sometimes, a racial stress-related response (Forsyth & Carter, 2014; Phan et al., 2020). In addition, Ruglass and colleagues found that Black American women were less likely to receive a clinician rating of hypervigilance, traumatic amnesia, and detachment than Hispanic/Latinx women (2020). They also found that internal avoidance was more strongly related to PTSD severity in Black American women compared to non-Hispanic White women (Ruglass et al., 2020). Given the repercussions that often accompany sharing one's experiences of racial discrimination, Black Americans may have learned to avoid internal cues or expressions about these stressful experiences as a coping mechanism, which might also influence their response to other traumatic experiences (Garcia et al., 2005; Stangor et al., 2002).

As highlighted above and demonstrated in broader research, differences in type and degree of exposure to stress and trauma, discrimination, coping strategies, cultural beliefs, expressions of distress, and ethnic-racial identity are some factors that might influence the development and experience of a unique pattern of trauma symptomology in Black Americans (Hinton & Lewis-Fernández, 2011; Michopoulos et al., 2015; Sullivan et al., 2018; Weiss et al., 2021). A limited understanding of the expression of PTSD in specific populations and cultural contexts can result in underdiagnosis of this disorder, thus warranting a thorough and culturally sensitive assessment of PTSD at the item level.

The gold standard for self-reported PTSD assessment is the PTSD Checklist for *DSM-5* (PCL-5; Weathers et al., 2013), a 20-item measure of *DSM-5* PTSD symptoms. Research

supports the psychometric properties of the PCL-5 in a variety of populations (Blevins et al., 2015; Bovin et al., 2016; Morrison et al., 2021; Roberts et al., 2021; Wortmann et al., 2016). Research also indicates that the PCL-5 has good diagnostic utility compared to a PTSD diagnosis based on the Clinician-Administered PTSD Scale for *DSM-5* (CAPS-5; Weathers et al., 2013; Geier et al., 2019; Weathers et al., 2018). Although there is a substantial amount of psychometric research on the PCL-5, there are no known studies that examine the psychometric properties of this measure among Black Americans, exclusively. Notably, psychometric research thus far has included very few Black participants.

Due to the lack of previous research on the PCL-5 in Black Americans, conducting an IRT analysis of the PCL-5 is an important step in learning more about its psychometric performance among Black Americans. IRT is an estimate of ability level or θ, which represents the latent construct of interest. The item response function (IRF) represents the non-linear association between θ and likelihood of a particular response option to an item on a measure of the latent construct (Reeve, 2003; Reise et al., 2005). The item's difficulty, or the level of the latent construct where an individual has a 50% chance of endorsing a particular response option, is calculated using the x-axis location of the inflection point on the IRF (Reise et al., 2005; Reise & Haviland, 2005). When examining the IRF, inflection points further to the right indicate higher difficulty levels and require possession of higher latent construct levels for endorsement. For example, an item with high difficulty on the PCL-5 would be one which is unlikely to be endorsed even among individuals with the highest PTSD symptom severity. The item's discrimination, or its ability to distinguish between individuals who have different levels of the latent construct, is represented by the slope of the IRF at the inflection point. More discriminating items have steeper slopes at the inflection point (Reise et al., 2005).

The information function, which represents a measure's precision across varying levels of θ, is a transformation of an item's IRF (Reeve, 2003). The information function provides information about how much an item contributes to the ability score (Hambleton & Jones, 1993) or at which range of θ an item contributes the most distinguishing information (Reeve, 2003). When the information function includes higher peaks, this indicates higher levels of item discrimination, meaning that the item provides more relative information about the latent construct. Each items' relative contribution can be compared by placing multiple items' information functions on one graph (Reeve, 2003). The information function informs test development and refinement by identifying items that provide more or less information about the latent construct across different ability level ranges (Reise et al., 2005). According to Raykov (2016), instrument revision can be conducted by examining each item's item information function (IIF) and choosing items that discriminate well at the desired level of θ.

As such, not only will an IRT analysis allow us to learn more about the PCL-5's psychometric performance among Black Americans, it will also inform development of an abbreviated measure that is most relevant to Black Americans. Previous research on this topic utilized exploratory factor analysis, stepwise logistic regression, and a new machine learning method and indicated that flashbacks, external avoidance, detachment, and irritability or anger were the best items among service members (Zuromski et al.,

2019). However, this study utilized a sample with few Black participants, limiting its generalizability.

Conducting an IRT analysis of the PCL-5 among Black Americans is also relevant to the new *International Classification of Diseases, 11th Edition* (*ICD-11*; World Health Organization, 2018) PTSD criteria, which takes a narrow approach to PTSD by removing symptoms that are thought to be more related to depression or other disorders and retaining only symptoms considered to be core PTSD symptoms (Stein et al., 2014). The criteria include the following six symptoms: re-experiencing (flashbacks, nightmares); avoidance (internal, external); and sense of threat (hypervigilance, exaggerated startle response). Given that very little research has been conducted on the *ICD-11* criteria among Black Americans, the current study can help inform this new criteria's relevance to Black Americans. Finally, an IRT analysis of the PCL-5 among Black Americans will aid in more effective treatment by highlighting the symptoms that could be the most important to target.

In sum, the aim of the current study was to conduct an IRT analysis of the PCL-5 to further examine this measure's psychometric properties among urban-dwelling Black Americans with the potential to inform the development of an abbreviated measure, the *ICD-11* PTSD criteria, and more effective treatments. Specifically, we examined the item response functions, difficulty parameters, information functions, and discrimination parameters at clinically significant levels of PTSD.

We hypothesized that the most discriminating items would include symptoms from the re-experiencing cluster such as flashbacks and nightmares based on previous IRT research conducted on the *DSM-IV* PTSD symptom criteria (Fissette et al., 2014; King et al., 1998; Palm et al., 2009) as well as the strong theoretical support that these symptoms represent core features of PTSD (Brewin et al., 2009). Additionally, we hypothesized that reckless or self-destructive behavior would emerge among the most discriminating items at the highest levels of PTSD (i.e., above three standard deviations above the mean). Previous research has indicated that endorsement of this symptom at clinically significant levels is associated with higher overall PTSD symptom severity, depression severity, and rumination, as well as difficulties with distress tolerance and anger (Contractor et al., 2017). However, this research included very few Black participants, so it is important to continue to explore this potential finding among Black individuals. Notably, previous research indicated that reckless or self-destructive behavior was among the least discriminating items, but this was likely due to the low prevalence of endorsement in those samples as well as the inclusion of individuals who had low levels of functional impairment (i.e., college students, MTurk participants; Silverstein et al., 2020).

We also hypothesized that there would be two types of items that perform poorly. The first type of item that was expected to perform poorly were items that were both low in difficulty and discrimination. Specifically, hypervigilance was expected to be among the least difficult and least discriminating items, as it is relatively common among Black Americans for reasons other than PTSD and because some researchers posit that hypervigilance is an adaptive response to experiencing racism and witnessing violence (Forsyth & Carter, 2014; Phan et al., 2020).The negative alterations in cognition and mood (NACM) symptoms were

also expected to perform poorly due to low difficulty and discrimination. Although previous research has indicated that the NACM symptoms are actually among the most discriminating items (Silverstein et al., 2020), these symptoms are hypothesized to be among the least discriminating in the current sample for a few reasons. First, Silverstein and colleagues (2020) utilized a college sample and an MTurk sample with very few Black participants. As Black Americans experience higher rates of trauma exposure, it is expected that the current sample will experience symptoms that are more akin to the "core" symptoms of PTSD represented by the *ICD-11*. Additionally, some NACM symptoms represent cognitive symptoms that have much overlap with their corresponding behavioral symptoms in the alterations in arousal and reactivity (AAR) category. In one study, participants still met criteria for PTSD after removing these NACM symptoms, indicating that these symptoms do not contribute new information to the diagnostic picture (Franklin et al., 2016). In another study, the NACM symptom cluster accounted for much of the variance in depressive symptoms, indicating that this symptom cluster overlaps with depression and might not represent a core component of PTSD (Dell et al., 2020).

The second type of item that was expected to perform poorly were items that were not very discriminating but highly difficult. Specifically, traumatic amnesia was found to be among the least discriminating and most difficult items in previous IRT research (Silverstein et al., 2020). This item also tends to have poor loadings on the AAR factor (Forbes et al., 2015; Liu et al., 2014) and lacks diagnostic utility (Green et al., 2017). It is possible that these empirical findings might be influenced by restriction of range due to very low prevalence rates of traumatic amnesia compared to other *DSM-5* PTSD symptoms (Miller et al., 2013).

Method

Participants

The analytic sample consistent of 307 participants who self-identified as African American or Black and completed the PCL-5. The majority of participants identified as female (85.0%) and 15.0% identified as male. The mean age was 43.63 (SD = 13.22). In terms of educational attainment, 20.2% of participants reported obtaining less than a high school education, 30.0% reported obtaining a high school degree (or equivalent), and 49.5% reported completing more than a high school degree. For monthly income, 20.8% reported less than $500, 18.2% reported between $501 and $999, and 55.7% reported $1,000 or more. On average, participants reported witnessing and experiencing various types of traumatic experiences (M = 7.53, SD = 4.03) which are described below.

Procedure

Participants in this study were recruited as part of a larger study of PTSD occurring in the context of a non-profit healthcare system in Atlanta, Georgia. Participants were approached in a random manner by trained undergraduate and postbaccalaureate interviewers in various non-psychiatric clinics or were contacted based on upcoming medical visits through chart review. Eligibility criteria included being between 18 and 65 years of age, having the ability to provide informed consent, and not being hospitalized in the last month for psychiatric reasons. For most participants, interviewers administered a battery of self-report

measures to participants in person which took 1 to 2 hours depending on participants' availability and extent of their symptoms. They were compensated $15 for their time. For any participants recruited after March 2020 when the COVID-19 pandemic began, visits were conducted by phone or a HIPAA-compliant telehealth platform (Zoom). Amount of time and compensation amount remained the same. The study procedures reported here were approved by the university and hospital ethics review boards and were carried out in accordance with the provisions of the World Medical Association Declaration of Helsinki.

Measures

A demographics questionnaire was used to assess sex, age, and race. Traumatic Events were experienced using the Traumatic Events Inventory (TEI) (Schwartz, Bradley, Sexton, Sherry, & Ressler, 2005) which is a 19-item screening instrument for lifetime history of traumatic experiences. Trained experimenters asked participants to indicate the number of times they experienced various traumatic incidents, including physical and sexual abuse, experiencing/witnessing violence, and other traumatic incidents. Participants reported the frequency of each traumatic experience on a scale of 0 *(zero times)* to 8 *(greater than 20 times)* for each traumatic event they endorsed. The TEI has been shown to be associated with related constructs (e.g., PTSD symptoms) in previous work (Gillespie et al., 2009; Mekawi et al., 2021). On average, participants in the current sample endorsed being exposed to or experiencing over seven traumatic events, ranging from sexual abuse to physical assault, and also reported that these experiences were chronic.

PTSD symptoms were assessed using the PCL-5 (Weathers et al., 2013), a 20-item self-report measure of *DSM-5* PTSD symptoms. Only participants who endorsed *any* Criterion A trauma were included in the study. The PCL-5 instructs respondents to rate how much they have been bothered by PTSD symptoms related to any of the traumas they endorsed on the TEI (e.g., *feeling very upset when something reminded you of the stressful experience; feeling jumpy or easily startled*) in the past month, using a 5-point scale ranging from 1 (*not at all)* to 5 (*extremely)*. Higher PCL-5 scores indicate greater PTSD symptom severity, and possible scores range from 0 to 80. PCL-5 scores have strong reliability and validity (Blevins et al., 2015). In the current sample, $\alpha = .96$ for the full scale, .91 for the re-experiencing subscale, .86 for the avoidance subscale, .90 for the NACM subscale, and .85 for the AAR subscale.

Data Analytic Plan

We conducted the following analyses using Mplus version 8 with individual items as indicators for the latent variable model. We treated items as ordinal rather than continuous, due to the small number of response options on the PCL-5 and non-normally distributed data (Flora & Curran, 2004; Raykov, 2016). Accordingly, we estimated parameters using mean- and variance-adjusted weighted least squares (WLSMV) and handled missing data using pairwise deletion (Enders, 2010). We assessed model fit using the following indices and fit statistics cutoffs (Hu & Bentler, 1999; Kline, 2005): χ^2 with a $p > .05$; comparative fit index (CFI) ≥ .95; Tucker-Lewis index (TLI) ≥ .95; and root mean square error of approximation (RMSEA) ≤ .06. Overall fit of each model was interpreted by taking all fit statistics into account (Brown, 2015).

We examined the item and test characteristics (i.e., item difficulty parameters for each threshold, item discrimination parameters for each item, the CRC, and the IIF) of the unidimensional graded response model with all 20 items loading on to a single general PTSD factor using the parameter estimates and graphs generated by Mplus version 8. When examining discrimination parameters, we used the IIF and focused on items that peak at high levels of θ, approximately 1.5 to 3 standard deviations above the mean, which represent moderate to high levels of PTSD where a PTSD diagnosis is most relevant (Raykov, 2016).

Results

Covariance coverage ranged from 0.997 to 1.00. For descriptive statistics of the PCL-5, see Table 1. There were 135 (43.0%) participants who met criteria for a provisional PTSD diagnosis based on the recommended cutoff score of 33 on the PCL-5 (Wortmann et al., 2016). The majority of the fit statistics for the unidimensional graded response model indicated adequate fit, χ^2= 810.78, $p < .05$;; CFI = .96; TLI = .95; SRMR = .05 with the exception of one (RMSEA = .11 95%CI[.10, .12]).

Item Difficulty

The most to least difficult items were: reckless or self-destructive behavior, traumatic amnesia, flashbacks, nightmares, blame, exaggerated startle response, inability to experience positive emotions, strong negative beliefs, cued physical reactions, strong negative feelings, irritability or anger, difficulty concentrating, diminished interest, detachment, intrusive memories, external avoidance, cued emotional distress, internal avoidance, difficulty sleeping, and hypervigilance. See Supplemental Figure 1 for the CRC and Table 2 for the difficulty parameters.

Item Discrimination

The most to least discriminating items at approximately 1.5 to 3 standard deviations above the mean were: flashbacks, inability to experience positive emotions, nightmares, strong negative beliefs, exaggerated startle response, irritability or anger, internal avoidance, blame, cued physical distress, intrusive memories, reckless or self-destructive behavior, strong negative feelings, external avoidance, traumatic amnesia, difficulty concentrating, detachment, difficulty sleeping, cued emotional distress, hypervigilance, and diminished interest.

The most to least discriminating items overall were diminished interest, negative emotions, cued emotional distress, detachment, inability to experience positive emotions, concentration difficulties, intrusive memories, cued physical reactions, flashbacks, exaggerated startle response, negative beliefs, irritability or anger, internal avoidance, external avoidance, nightmares, sleep difficulties, blame, hypervigilance, reckless or self-destructive behavior, and traumatic amnesia.

At high levels of PTSD (above 3 *SD*s), the most discriminating items were reckless or self-destructive behavior, traumatic amnesia, blame of self or others, and nightmares. At levels of PTSD below the mean, the most discriminating items were hypervigilance, sleep difficulties, internal avoidance, and external avoidance.

The test information function results indicated that the PCL-5 items provided the most information at .5 to 1.5 *SD*s. See Supplemental Figure 2 for the IIF and Table 2 for the discrimination parameters.

Discussion

Fine-grained examination of PTSD symptoms in Black Americans is critical given that this population is more likely to be exposed to traumatic events and experience PTSD compared to other racial groups. Such examination is necessary to develop and accurately answer research questions examining PTSD etiology in this population. To address this gap in the literature, we used IRT to assess item difficulty and discrimination of one of the most commonly used assessment tools, the PCL-5, in a sample of urban-dwelling, trauma-exposed Black American adults. Overall, our analyses indicated the PCL-5 items functioned considerably differently compared to samples from previous research both in terms of item difficulty (i.e., the ease which an item is endorsed) and item discrimination (i.e., the item's ability to distinguish between people with different levels of PTSD).

When examining item difficulty, results were partially consistent with our hypotheses and indicated that the least difficult items were hypervigilance, difficulty sleeping, internal avoidance, cued emotional distress, difficulty concentrating, and diminished interest. This pattern differs from recent work (Silverstein et al., 2020) finding that the least discriminating items in a community sample were sleep difficulties, internal avoidance, negative beliefs, external avoidance, cued emotional distress, and detachment. These results suggest that even individuals with low levels of PTSD symptoms are likely to endorse hypervigilance, difficulty sleeping, and internal avoidance. One possible explanation for why hypervigilance and sleep difficulties had low levels of difficulty in our sample (and also were among the least discriminating) is that Black Americans may experience these symptoms not necessarily as a result of PTSD, but as a result of living in a racialized society and contending with racism on a day-to-day basis. In support of this idea, Hicken et al. (2013) found that racism-related vigilance was associated with sleep difficulties and that this vigilance accounted for racial disparities in sleep difficulties. Further, experiencing racial discrimination was found to be associated with insomnia risk in a sample of Black women (Bethea et al., 2020).

Racism may also contribute to the low level of difficulty of internal avoidance in our sample. Particularly for Black women, who may experience pressure to overcome racism by adhering to tenets of the Strong Black Woman schema such as emotional suppression (Abrams et al., 2019a; Watson-Singleton, 2017), internal avoidance of trauma reminders may be particularly salient. Internal avoidance of trauma reminders may fall into a larger pattern of emotional suppression rooted in a history of racism occurring at multiple levels (e.g., disproportionate exposure to policing, poverty, and violence). Thus, as a function of contending with direct and indirect racism on a day-to-day basis, Black Americans may have elevated baseline levels of hypervigilance, sleep difficulties and internal avoidance, which, in turn, may explain why these items were the least difficult in our sample.

The most difficult items, on the other hand, were reckless or self-destructive behavior, traumatic amnesia, flashbacks, nightmares, blame, exaggerated startle response, and cued physical reactions. Reckless or self-destructive behavior emerging as the most difficult item is consistent with our hypothesis and findings from other IRT work using undergraduate and community samples (Silverstein et al., 2020; Miller et al., 2013). As a new addition to the PTSD criteria in the *DSM-5*, part of the justification for including this symptom was that it was commonly observed in adolescents (Friedman et al., 2011) and consequently, it may be less relevant for adults. In addition, among Black participants with low socioeconomic resources, high difficulty level of engaging in reckless or self-destructive behavior may be due to greater financial and social costs compared to the general population (e.g., leading to police interactions) associated with engagement in such behavior. Traumatic amnesia and flashbacks emerging as the second and third most difficult items is also consistent with previous research using a community sample (Silverstein et al., 2020). Individuals may, on average, be less likely to endorse traumatic amnesia and flashbacks because these symptoms are more likely to occur in the rarer context of PTSD with dissociative symptoms (Miller et al., 2013). These interpretations are also consistent with our finding that at high levels of PTSD (above 3 *SD*s), the most discriminating items were risky behavior and traumatic amnesia.

When examining item discrimination at clinically significant levels of PTSD (1.5–3 *SD*s above the mean), the most discriminating items were: flashbacks, inability to experience positive emotions, nightmares, strong negative beliefs, exaggerated startle response, and irritability/anger. Flashbacks and nightmares emerging as highly discriminating items at clinically significant levels of PTSD is consistent with our hypothesis as well as prior theoretical and empirical work designating these symptoms as core PTSD symptoms (Fissette et al., 2014; Silverstein et al., 2020). These two symptoms emerging as being highly discriminating is also consistent with the narrower approach adopted by the *ICD-11*, which was designed to represent the core features of PTSD. In contrast and inconsistent with our hypothesis, however, inability to experience positive emotions, which is not included as a symptom in the *ICD-11*, also emerged as a highly discriminating item. This could potentially mean that, among Black Americans, inability to experience positive emotions could represent a core symptom of PTSD. In line with this, one study found that even when these symptoms are excluded from the PTSD criteria, the *ICD-11* nevertheless identified similar rates of depressive disorders (Barbano et al., 2019). Research using network analysis has also reinforced the relevance of these symptoms for PTSD (Cero & Kilpatrick, 2020). Furthermore, given that experiencing more severe PTSD symptoms is associated with higher likelihood of experiencing co-occurring depressive symptoms, it is possible that this symptom is highly discriminating because it overlaps with depressive symptoms more likely to be found in individuals with clinically significant levels of PTSD. Taken together, flashbacks, inability to experience positive emotions, and nightmares appear to be particularly relevant for identifying clinically significant symptoms of PTSD in this sample.

The least discriminating items at clinically significant levels of PTSD (1.5–3 *SD*s above the mean) were diminished interest, hypervigilance, cued emotional distress, difficulty sleeping, detachment, and difficulty concentrating. With the exception of cued emotional

distress, the symptoms that emerged as less discriminating are generally not considered core PTSD symptoms (Cero & Kilpatrick, 2020). Cued emotional distress emerging as a non-discriminating item, however, is inconsistent with previous research (Silverstein et al., 2020) and our hypothesis. There are at least two possible reasons why cued emotional distress did not differentiate between individuals with clinically significant levels of PTSD. One possibility is that the nature of the trauma endorsed in our sample may be particularly conducive to being emotionally upset regardless of whether individuals experience clinically significant PTSD symptoms. Thus, given the breadth and chronicity of these traumatic events in our sample, being reminded of these events may be likely to elicit emotional distress across individuals regardless of whether their symptoms are clinically significant. An alternative explanation is that expression of emotional distress is less clinically meaningful in our sample of predominately Black American women. As noted earlier, adherence to norms like the Strong Black Woman schema may influence the likelihood of emotional expression (Abrams et al., 2019b) in the face of stress. Thus, the degree to which individuals experience cued emotional distress may be more of a function of cultural factors (e.g., internalization of schemas) rather than PTSD symptom severity. Taken together, these results highlight the necessity of more in-depth work designed to understand the phenomenology of clinically significant PTSD symptoms in Black populations. Finally, the test information function results indicated that the PCL-5 items provided the most information at .5 to 1.5 *SD*s. This suggests that the PCL-5 may be well-suited for use as a screening tool because it likely will not exclude people with clinically significant levels of PTSD from further assessment.

Implications

In terms of assessment implications, the results of the current study suggest that a reduced PTSD criterion set could potentially include flashbacks, inability to experience positive emotions, nightmares, strong negative beliefs, exaggerated startle response, and irritability or anger, as these were the most discriminating items at clinically significant levels of PTSD. These results are somewhat in line with the *ICD-11* symptom criteria, as they both include flashbacks, nightmares, and exaggerated startle response, but they differ in their de-emphasis of avoidance symptoms and emphasis of NACM symptoms. In terms of avoidance, one possibility is that participants in our sample are unable to avoid both thoughts and external reminders of the trauma given their social context. For example, it may be difficult to avoid reminders of physical assault when living in under-resourced neighborhoods with a high prevalence of community violence. Notably, our results indicate that NACM symptoms (i.e., inability to experience positive emotions, strong negative beliefs) were highly discriminating, which, although inconsistent with the *ICD-11* model, is in line with previous work emphasizing the relevance of these symptoms for PTSD (Cero & Kilpatrick, 2020).

Although IRT analyses primarily inform diagnostic relevance of individual PTSD symptoms, it is also possible that our findings can also inform culturally relevant treatment of PTSD in Black Americans. As evidence suggests that hypervigilance and cued emotional distress were found to be less discriminating among Black Americans, intervention using the Prolonged Exposure framework may be more effective when targeting symptoms such

as nightmares, flashbacks, and exaggerated startle response. Clinicians may see greater symptom reduction by focusing on the symptoms that are central to Black Americans' PTSD presentation, rather than focusing on symptoms like hypervigilance and cued emotional distress, which may be relevant to many Black Americans' experience beyond the context of PTSD (Williams et al., 2014). Results also suggest the potential for the addition of adjunct image-based therapies, including Image Rehearsal Therapy, to target nightmares, as this symptom was among the most highly discriminating at 1.5 to three standard deviations above the mean (Krakow & Zadra, 2010; Ulmer et al., 2011).

Additionally, results indicate that NACM symptoms may represent an important treatment target, particularly inability to experience positive emotions, strong negative beliefs, and blame, which is consistent with research that suggests that treating NACM symptoms is important for the overall course of PTSD treatment (Brown et al., 2018). Clinicians should consider Cognitive Processing Therapy (CPT) when working with Black Americans as it has been shown to be effective at improving negative affect and maladaptive cognitions (Resick et al., 2016). However, more evidence is needed to support CPT's efficacy in Black Americans. Further, to address inability to experience positive emotions, clinicians may also consider incorporating behavioral activation with Black Americans (Etherton & Farley, 2020).

Given differences in discrimination and difficulty parameters in the current Black American sample compared to previous work with predominantly White participants (e.g., Silverstein et al., 2020), it might be useful to consider the role race-relevant factors such as race-related traumatic experiences in the phenomenology of PTSD in this population. For example, clinicians may also incorporate discussions of experiences of discrimination and racial trauma. This may include integrating race-related reflections during assessments, conceptualizations, and treatment with Black Americans (McClendon et al., 2020; Williams et al., 2014). Research suggests that experiences of racism can manifest in psychological processes like those identified in PTSD (Carter, 2007; Kirkinis et al., 2018). Consequently, clinicians should create space for Black Americans to identify and process experiences of discrimination (Mosley et al., 2021).

Limitations and Future Directions

Although these results advance the literature on PTSD assessment in Black Americans, they must be considered in the context of several important limitations. First, our use of a non-clinical sample prohibits us from more closely examining the phenomenology of clinically significant PTSD symptoms. Future research using a clinical sample measure will increase knowledge about how PTSD symptoms manifest in those with more severe symptomology. Second, and related to the first point, although the PCL-5 was administered by trained experimenters, it is nevertheless a self-report measure that does not provide the many strengths of a clinician-administered diagnostic measure, including more careful and nuanced assessment of clinically significant symptoms. As such, future research would benefit from examining the current research questions using a clinician-administered measure of PTSD

Third, we used a unidimensional IRT model with all items loading on to one PTSD factor instead of the four-factor *DSM-5* model. Although the unidimensional model is in opposition to research that indicates PTSD is multidimensional (Armour et al., 2015; Elhai et al., 2011; King et al., 1998; Liu et al., 2014; Tsai et al., 2015), it was the ideal method in the current study as our research question was best answered by considering all items at once; the PTSD factors were highly intercorrelated ($r = 0.63 – 0.82$) indicating they might represent highly overlapping constructs and thus a lower level of dimensionality; and fit statistics for the one-factor model were adequate. Future research may benefit from assessing the psychometric properties of the PCL-5 for Black Americans using the multidimensional *DSM-5* approach to examine difficulty and discrimination parameters within symptoms clusters.

Fourth, although we recommended a reduced PTSD criterion set for Black Americans, we must note that there are features of the current sample that might limit generalizability to the broader Black American population. These features include a disproportionate number of women and the inclusion of only urban-dwelling individuals with relatively lower socioeconomic resources. Future research should explore the possibility of a reduced criterion set in a variety of subsets of the Black American population as well as examine the role of several potentially relevant covariates (e.g., access to socioeconomic resources, experiences of racism).

Fifth, given the breadth and chronicity of the trauma reported by our participants, we opted for the PCL-5 civilian version which did not ask participants to report symptoms about a single index trauma. Although this measure is optimal in its flexibility, one major limitation is the potential for inflation of symptom severity. For example, participants with multiple traumatic exposures may report higher overall symptoms because they are considering several traumas (e.g., intrusive symptoms related to one trauma and nightmares related to another trauma). Requiring participants to choose a single trauma or category of trauma may have allowed for greater standardization of administration as well as greater interpretability of results. Future psychometric studies examining the issue of multiple traumas are needed to elucidate the phenomenology of PTSD among participants with high trauma exposure.

Finally, research has found that ethnic-racial identity strength is related to PTSD symptom severity. Specifically, in the presence of a weaker ethnic-racial identity, individuals were more likely to experience positive and negative emotional avoidance, and in turn, had more severe PTSD symptoms (Weiss et al., 2021). These findings might explain any unique trend of endorsement of PTSD symptoms like cued emotional distress, internal avoidance, and persistent negative emotional state or inability to experience positive emotions. As such, future research should consider the role of experiences of racial discrimination and ethnic-racial identity in predicting PTSD symptom presentation.

Conclusion

Given the disproportionate impact of trauma and PTSD on Black Americans, sound assessment of PTSD in this population is necessary to accurately answer research questions examining PTSD etiology. To this end, this study advances the literature by examining the

item-level psychometric properties of one of the most commonly used assessment tools, the PCL-5, among Black Americans. Our results emphasized the importance of flashbacks, inability to experience positive emotions, and nightmares and deemphasized the importance of hypervigilance and sleep difficulties when assessing for clinically significant symptoms of PTSD in Black Americans. This study lays the groundwork for future research that aims to understand the etiology, course, and treatment of PTSD symptoms among Black Americans.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Research on accurate assessment of PTSD among Black Americans is scarce.
- Item-level psychometric properties of the PCL-5 have not been examined.
- We used item response theory to assess item difficulty and discrimination
- Most discriminating items were flashbacks and inability to experience positive emotions.
- Least discriminating items were cued emotional distress and diminished interest.

Table 1

Descriptive Statistics of the PCL-5

Scale	*M* (*SD*)	Median	Range	Skewness	Kurtosis
Total Score	30.37 (*21.62*)	27.00	0–77	0.35	−1.08
Rex	7.37 (*6.30*)	6.00	0–20	0.44	−1.07
Avoid	3.57 (*2.82*)	4.00	0–8	0.10	−1.41
NACM	10.15 (*8.19*)	9.00	0–27	0.37	−1.14
AAR	9.29 (*6.58*)	8.00	0–24	0.35	−1.07

Note. PCL-5 = Posttraumatic Stress Disorder Checklist – 5; Rex = re-experiencing; Avoid = avoidance, NACM = negative alterations in cognition and mood; AAR = alterations in arousal and reactivity.

Table 2

Discrimination and Difficulty Parameters

PTSD by	*a*	b_1	b_2	b_3	b_4
PCL1	0.860	−0.525	0.094	0.407	0.983
PCL2	0.791	−0.012	0.443	0.724	1.354
PCL3	0.841	−0.004	0.443	0.800	1.354
PCL4	0.871	−0.602	−0.053	0.201	0.745
PCL5	0.843	−0.226	0.168	0.425	0.996
PCL6	0.795	−0.563	0.012	0.269	1.023
PCL7	0.794	−0.497	−0.045	0.210	0.870
PCL8	0.569	0.346	0.563	0.858	1.513
PCL9	0.800	−0.201	0.218	0.525	1.156
PCL10	0.670	−0.012	0.452	0.682	1.240
PCL11	0.879	−0.398	0.037	0.372	0.944
PCL12	0.881	−0.497	0.045	0.260	0.703
PCL13	0.867	−0.507	−0.004	0.226	0.800
PCL14	0.864	−0.206	0.274	0.639	1.256
PCL15	0.799	−0.372	0.201	0.516	1.051
PCL16	0.573	0.735	1.172	1.595	1.942
PCL17	0.651	−0.789	−0.311	−0.029	0.461
PCL18	0.821	−0.127	0.269	0.554	1.125
PCL19	0.863	−0.461	0.119	0.407	0.858
PCL20	0.741	−0.582	−0.226	0.061	0.582

Note. PTSD = posttraumatic stress disorder; PCL = Posttraumatic Stress Disorder Checklist – 5

a = IRT discrimination parameter

$b_{1–4}$ = IRT difficulty parameters for thresholds 1–4.