

The Influence of Veteran Race and Psychometric Testing on Veterans Affairs Posttraumatic Stress Disorder (PTSD) Disability Exam Outcomes

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This study examined the influence of veterans' race and examiners' use of psychometric testing during a Department of Veterans Affairs posttraumatic stress disorder (PTSD) disability examination on diagnostic and service connection status outcomes. Participants were 764 veterans enrolled in a national longitudinal registry. Current and lifetime PTSD diagnostic status was determined with the Structured Clinical Interview for *DSM-IV* (SCID) and was compared with PTSD diagnosis conferred upon veterans by their compensation and pension (C&P) examiners as well as with ultimate Veterans Affairs (VA) PTSD service connected status. The concordance rate between independent SCID current PTSD diagnosis and PTSD disability examination diagnosis was 70.4%, and between SCID lifetime PTSD diagnosis and PTSD disability examination diagnosis was 77.7%. Among veterans with current SCID diagnosed PTSD, Black veterans were significantly less likely than White veterans to receive a PTSD diagnosis from their C&P examiner (odds ratio [OR] = .39, $p = .003$, confidence interval [CI] = .20–.73). Among veterans without current SCID diagnosed PTSD, White veterans were significantly more likely than Black veterans to receive a PTSD diagnosis from their C&P examiner ($OR = 4.07$, $p = .005$, $CI = 1.51–10.92$). Splitting the sample by use of psychometric testing revealed that examinations that did not include psychometric testing demonstrated the same relation between veteran race and diagnostic concordance. However, for examinations in which psychometric testing was used, the racial disparity between SCID PTSD status and disability exam PTSD status was no longer significant. Results suggest that psychometric testing may reduce disparities in VA PTSD disability exam outcomes.

Keywords: veterans, PTSD, disability, disparities, service connection

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This research was funded by the Department of Defense, Congressionally Directed Medical Research Program under designations W81XWH-08-2-0100/W81XWH-08-2-0102 and W81XWH-12-2-0117/W81XWH-12-2-0121.

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Over the past 15 years, the number of veterans who have applied for and received posttraumatic stress disorder (PTSD) related disability compensation from the U.S. Department of Veterans Affairs (VA) has risen dramatically. For example, between 2008 and 2013, the number of veterans receiving disability compensation for PTSD rose from 467,274 to 648,992 (U.S. Department of Veterans Affairs, 2013), a 72% increase. VA disability compensation is a tax-free monetary benefit paid to veterans for service connected (SC) disabilities (i.e., those which arose during, or were worsened by, military service). To receive benefits (e.g., free health care, financial compensation) for disability related to service conditions, veterans must submit a claim to the Veterans Benefits Administration (VBA), which then gathers evidence to determine whether the condition in question is present, associated with a disability, and started or got worse as a result of military service. One major component reviewed by the VBA to make these determinations is the compensation and pension (C&P) examination. For PTSD claims, this involves an in-person clinical interview conducted by a licensed psychologist or psychiatrist. Examiners are asked to determine whether the claimant's symptoms meet the diagnostic criteria for PTSD as defined by the *Diagnostic and Statistical Manual for Mental Disorders (DSM; American Psychiatric Association, 2000)* and must document related changes in quality of life and psychosocial functioning (VBA, 2014). However, there is no standard methodology required to conduct the examination. Following the C&P examination, a VBA adjudication board reviews all evidence (e.g., service records, Social Security disability records, C&P examination results) and either approves or denies the provision of financial and other benefits.

As the number of PTSD disability claims began to increase, the VA Office of the Inspector General (OIG; 2005) conducted an internal investigation to determine the causes of both this unprecedented increase in claims and the notable disparities in disability payments made to veterans living in different states. A key finding of this investigation was that the accuracy of the disability rating and amount of compensation benefits paid for military SC disabilities is highly dependent upon the methodology used in disability evaluations. The report also noted that, because of the reliance upon an individual's self-report during the examination, determinations about the diagnostic status of mental health conditions (e.g., PTSD) are open to examiner interpretation. This is especially concerning because many VA PTSD disability examiners do not use evidence-based assessment methods during their examinations, even though these methods result in more complete and accurate coverage of PTSD symptoms and associated functional impairment during PTSD disability examinations (Jackson et al., 2011; Speroff et al., 2012). Concerns voiced about the accuracy and quality of the PTSD disability examination were further substantiated by a recent study by Marx and colleagues (2016) showing that the association between a PTSD diagnosis as determined by an independent evaluator using evidence-based methods and PTSD SC status is often discordant. Specifically, Marx et al. found that a significant minority of veterans who are currently receiving VA benefits for SC PTSD do not actually meet criteria for the disorder. Similarly, the authors' results indicated that a substantial number of veterans with military service-related PTSD who are sufficiently disabled by the disorder were denied these same benefits. However, Marx et al. (2016) did not examine the concordance

between PTSD diagnosis determined by an independent assessor and the diagnosis made by the PTSD C&P examiner.

The VA OIG investigation also suggested that a number of other factors outside of the diagnostic criteria (e.g., veterans' age, branch of service) might impact VA disability rating outcomes. Notably, the influence of veteran racial status on these ratings was not examined. This exclusion is noteworthy, as research both prior to and since the VA OIG investigation has shown that Black veterans receive different VA care than White veterans for a wide range of conditions (Saha et al., 2008); receive less intensive treatment for PTSD specifically (Rosenheck, Fontana, & Cottrol, 1995); are less likely to receive a minimal trial of treatment in the 6 months following PTSD diagnosis (Spoont et al., 2015); are less satisfied with the quality of their PTSD disability examinations (Rosen et al., 2013); and are less likely to be service connected for PTSD, even after controlling for PTSD symptom severity and level of functional impairment (Murdoch, Hodges, Cowper, Fortier, & van Ryn, 2003). These findings suggest that veteran racial status may also influence the outcomes of VA PTSD disability examinations as well as the potential eligibility for disability compensation and other VA benefits. However, researchers have not yet examined whether veterans' race moderates the concordance between the C&P examiner's diagnosis and an independent assessor's diagnosis of PTSD, particularly in the absence of psychometric testing during the disability exam.

This study extends the previous work on this topic by examining the extent to which diagnoses rendered by PTSD C&P examiners were concordant with diagnoses determined by assessors who conducted an independent, semistructured diagnostic examination subsequent to the PTSD disability examination. In addition, we examined if veterans' race contributed to discordance between these diagnostic outcomes, and whether the use of psychometric testing by the C&P examiner moderated any association between veteran race and the degree of concordance between PTSD diagnoses rendered by C&P examiners and PTSD diagnoses rendered by independent evaluators. We hypothesized that (a) among veterans diagnosed with PTSD by an independent evaluator, Black veterans would be more likely than White veterans to be denied a PTSD diagnosis by their C&P examiner; (b) among veterans who did not meet criteria for PTSD based on an independent evaluation, White veterans would be more likely than Black veterans to be granted a PTSD diagnosis by their C&P examiner; (c) the use of psychometric testing during disability exams would moderate the association between race and concordance, such that the use of psychometric testing would reduce the racial disparity between the independent PTSD diagnosis and the C&P examiner diagnosis; (d) the C&P examiner diagnosis would be associated with SC status; and (e) race would also affect concordance between PTSD diagnosis determined by an independent evaluator and SC status.

Method

Participants

Participants were a subsample of U.S. Army or Marine veterans enrolled between 2009 and 2012 in the baseline assessment of the Veterans After-Discharge Longitudinal Registry (Project VALOR), a registry of VA mental health care users with and without PTSD who deployed in support of Operation Enduring

Freedom, Operation Iraqi Freedom, or Operation New Dawn (OEF/OIF/OND). To be included in the cohort, veterans must have undergone a mental health evaluation at a VA facility. Veterans with probable PTSD according to VA medical records (i.e., at least two instances of a PTSD diagnosis by a mental health professional associated with two separate visits) were oversampled at a 3:1 ratio. Female veterans were oversampled at a rate of 1:1 (female:male). Potential Project VALOR participants ($n = 4,331$) were contacted by phone; of these, 2,712 (62.6%) consented to participate in the Project VALOR registry. Of consented participants, 2,169 (80.0%) completed the questionnaires and 1,649 (60.8%) completed both the questionnaires and the diagnostic interview, which comprised the final Project VALOR sample.

In this study, we included participants from Project VALOR who reported a military-related trauma as their index event for the Structured Clinical Interview for *DSM-IV* (SCID), were assessed for current and lifetime PTSD diagnostic status, had documentation of a PTSD disability exam in their electronic medical records (EMRs), and reported being either Black or White. Participants reporting a different racial status were excluded from our analyses because of small cell sizes, which would have limited statistical power. Seven hundred ninety-seven participants were excluded because they did not have a documented PTSD disability exam, 15 participants were excluded because they were not assessed for current PTSD, and 73 participants were excluded because they reported being a race other than Black or White. Our final sample ($n = 764$) ranged in age from 22 to 67 years ($M = 38.2$; $SD = 9.9$) and the majority of the sample (83.9%) had completed at least some college. Fifty-five percent ($n = 422$) of participants were men. Eighty-four percent ($n = 645$) were White veterans, whereas the remaining 16% ($n = 119$) were Black veterans. Ninety-two percent ($n = 703$) served in the Army and 8% ($n = 61$) served in the Marines. Respondents who did not meet the inclusion criteria were younger ($M = 36.6$, $SD = 9.5$ for the excluded participants), $t(1644) = 3.34$, $p < .001$, and less likely to be male (45.4% of the excluded participants; $\chi^2 = 15.79$, $p < .001$).

Procedure

Participants provided informed consent verbally over the telephone in accordance with the research protocol approved by all local Institutional Review Boards and the Human Research Protection Office of the U.S. Army Medical Research and Materiel Command. After receiving verbal consent, study staff scheduled the telephone interview and reminded the participant to complete the self-administered questionnaires online. Participants were compensated \$50 for their participation in the study.

Measures

Independent evaluation of PTSD diagnostic status. Trained, doctoral-level diagnosticians assessed current (past month) and lifetime PTSD via telephone using the PTSD Module of the Structured Clinical Interview for *DSM-IV* (SCID; First, Spitzer, Gibbon, & Williams, 2002). The SCID is a semistructured interview that assesses diagnoses associated with *DSM-IV*. Data collected with the PTSD SCID module has demonstrated good psychometric properties in veteran samples (Kulka et al., 1988).

Interviewers were blind to PTSD disability exam outcomes, PTSD SC status, and participant race. Throughout the study, we

held regular meetings with assessment personnel during which cases were discussed to ensure diagnostic reliability and to prevent rater drift. Interrater reliability for SCID interview data, computed based on a randomly selected subsample ($n = 54$), was excellent ($\kappa = .91$). SCID PTSD diagnostic status was the independent standard to which both C&P examiner PTSD diagnosis and PTSD SC status were compared.

PTSD disability exams and SC status. Trained research assistants collected C&P examiner-determined diagnoses and information on the use of psychometric testing by accessing the C&P section, the progress notes section, and the health summaries section of participants' EMRs. When multiple PTSD C&P exams were found in the EMR, we compared the C&P exams that were most proximal to our PTSD assessment, regardless of whether or not they were initial or review C&P exams, to minimize the possibility that any discrepancies would be due to change in diagnostic status over time. The mean time between disability exams and the Project VALOR assessment was 22.11 months ($SD = 18.35$). Research assistants also collected PTSD SC status information by accessing the disabilities section of participants' EMRs. These data were abstracted concurrently with the collection of Project VALOR self-report questionnaire and interview data.

Demographics. Participants completed a self-report questionnaire that gathered information about participant age, race, gender, education, and income.

Deployment Risk and Resilience Inventory. The Deployment Risk and Resilience Inventory (DRRI; King, King, Vogt, Knight, & Samper, 2006) is a collection of scales that assess combat-related factors associated with mental health conditions noted in veteran populations. DRRI scores have shown good internal consistency and satisfactory reliability among samples of Gulf War and Operation Iraqi Freedom veterans (Vogt, Proctor, King, King, & Vasterling, 2008). To assess combat exposure, the Combat Experiences subscale of the DRRI was included in the self-administered questionnaire.

Data Analysis Plan

We conducted three sets of analyses to examine the association between C&P examiner PTSD diagnosis and SCID PTSD diagnosis. First, we calculated 2×2 contingency tables to examine both the overall concordance between C&P examiner PTSD diagnosis and SCID PTSD diagnosis and the directionality of concordance/discordance. Participants were classified into four possible outcomes in these concordance analyses as (a) true positives (C&P examiner PTSD diagnosis is Yes and SCID PTSD diagnosis is Yes), (b) false negatives (C&P examiner PTSD diagnosis is No and SCID PTSD diagnosis is Yes), (c) false positives (C&P examiner PTSD diagnosis is Yes and SCID PTSD diagnosis is No), and (d) true negatives (C&P examiner PTSD diagnosis is No and SCID PTSD diagnosis is No). Overall concordance was calculated by summing the true positives and true negatives and discordance was calculated by summing the false positives and false negatives. In these initial analyses, we examined both current and lifetime diagnostic SCID PTSD status compared with C&P examiner PTSD status. Given that current PTSD symptoms, distress, and functional impairment are the typical focus of VA PTSD disability examinations and PTSD service connection decisions, we focused our primary analyses on comparing disability exami-

nation and service connection outcomes with current SCID PTSD diagnostic status. However, in an attempt to account for any discrepancies in diagnostic outcomes that might be unrelated to any of our variables of interest, we reran all analyses using lifetime SCID PTSD diagnostic status, instead of current SCID PTSD diagnostic status.

Next, we examined the effect of race on three different aspects of concordance/discordance. First, we examined whether Black veterans demonstrated significantly different patterns of overall concordance/discordance than White veterans. This was conducted as an omnibus test to see if differences appeared prior to examining the components of concordance. Second, we examined if race affected whether veterans who met criteria for a SCID PTSD diagnosis were classified as having PTSD by their C&P examiner (i.e., true positive) or not (i.e., false negative). If race does not affect concordance, we would expect rates at which veterans with a SCID PTSD diagnosis to be classified as true positives versus false negatives to be equivalent for White and Black veterans. Third, we examined if race affected whether veterans who did not meet criteria for a SCID PTSD diagnosis were classified as having PTSD by their C&P examiner (i.e., false positive) or not (i.e., true negative). If race does not affect concordance, we would expect rates at which veterans without a SCID PTSD diagnosis to be classified as true negatives versus false positives to be equivalent for White and Black veterans. For each of these questions, we conducted logistic regressions to see if race affected these different aspects of concordance after controlling for demographic variables that could potentially influence PTSD status (i.e., age, gender, education and income), as well as combat exposure, as assessed by the DRRI, and the amount of time between the Project VALOR assessment and the PTSD disability exam.

Finally, we examined whether the use of psychometric testing during a PTSD disability exam affected concordance between the C&P exam and the SCID. To do so, we first split the sample by whether psychometric testing was used during the disability exam. For each group, we then reran the logistic regressions examining the effect of race on overall concordance, categorization of SCID PTSD positive participants into true positive versus false negative, and categorization of SCID PTSD negative participants into true negative versus false positive. If psychometric testing had no effect, we would expect the outcomes of two sets of analyses to match each other as well as those for the full sample.

Because the PTSD disability examination is only one (albeit important) aspect of determining SC status, we were also interested in how the C&P examiner diagnosis related to SC status among participants in our sample. Therefore, we conducted a Pearson correlation to determine the association between C&P examiner PTSD diagnosis and SC status. Further, we were interested in examining whether our findings regarding race for C&P examiner PTSD also held for SC status. Therefore, we classified participants into true positives, true negatives, false positives, and false negatives based on SCID PTSD status and SC status (rather than C&P examiner PTSD diagnosis), and reran the three logistic regressions described previously.

Results

Diagnostic Concordance Between C&P Examiner PTSD Diagnosis and SCID PTSD Diagnosis

Concordance between both current and lifetime SCID PTSD diagnosis and C&P examiner PTSD diagnosis is reported in Table 1. The overall concordance rate was 70.4% for current PTSD and 77.7% for lifetime PTSD. Individuals who received a PTSD diagnosis from their C&P examiners were more than three times as likely as those who did not to also receive a current SCID PTSD diagnosis (odds ratio [OR] = 3.39, 95% confidence interval [CI] = 2.25–5.15, $p < .001$). The most frequent outcome using current SCID PTSD was true positive (62.9%) and the least frequent outcome was true negative (7.4%). There were slightly more false positives than false negatives (16.4% vs. 13.1%).

Race and Diagnostic Concordance

The average number of PTSD symptoms reported during the current SCID interview did not significantly differ between White ($M = 11.45$, $SD = 3.59$) and Black veterans ($M = 11.76$, $SD = 3.43$); $t(747) = -.87$, $p = .39$. Logistic analyses revealed that race did not significantly affect the overall concordance between current SCID PTSD diagnosis and C&P examiner PTSD diagnosis (74.8% concordance for White veterans vs. 74.4% concordance for Black veterans; $OR = .97$, $p = .90$; $CI = .60-1.57$; see Table 2). However, race did significantly affect several important aspects of concordance. Specifically, compared with Black veterans who did not receive a current PTSD diagnosis on the SCID, the odds were four times as great that White veterans who did not receive a current PTSD diagnosis on the SCID would receive a PTSD diagnosis from their C&P examiner (i.e., White veterans were more likely to be false positives than Black veterans; 26.5% vs. 54.5%, respectively; $OR = 4.07$, $p < .001$; $CI = 1.51-10.92$; see Table 2).

Among veterans who received a current SCID PTSD diagnosis, Black veterans were again less likely to receive a PTSD diagnosis from the C&P examiner than White veterans (78.9% vs. 90.8%, respectively). Specifically, Black veterans who received a current

Table 1
Contingency Tables for C&P Examiner PTSD Diagnosis and SCID PTSD Diagnosis

Diagnosis	C&P PTSD diagnosis	
	No	Yes
Current SCID PTSD diagnosis		
No	57 (7.4%) ^a	100 (13.1%) ^b
Yes	126 (16.4%) ^c	481(62.9%) ^d
Lifetime SCID PTSD diagnosis		
No	31 (4.1%) ^a	125 (16.4%) ^b
Yes	45 (5.9%) ^c	560 (73.5%) ^d

Note. C&P = compensation and pension; SCID = Structured Clinical Interview for DSM-IV; PTSD = posttraumatic stress disorder; ^a TN = true negatives; ^b FP = false positives; ^c FN = false negatives; ^d TP = true positives. Overall concordance for C&P Diagnosis and Current SCID Diagnosis (TP + TN) = 70.4% ($n = 538$). Overall concordance for C&P Diagnosis and Lifetime SCID Diagnosis (TP + TN) = 77.7% ($n = 591$).

Table 2

Race as a Predictor of Concordance Between Current SCID PTSD Status and C&P PTSD Status

Variable	Concordance vs. discordance		False positive vs. true negative		False negative vs. true positive	
	OR	CI	OR	CI	OR	CI
White vs. Black	.97	.60–1.57	4.07**	1.51–10.92	.39**	.20–.73
Combat exposure	.97**	.96–.99	.98	.94–1.01	1.04**	1.02–1.07
Education	1.02	.90–1.16	1.05	.82–1.36	1.01	.83–1.23
Gender	1.30	.89–1.92	1.47	.67–3.25	.65	.35–1.22
Income	.94	.83–1.06	.98	.76–1.27	1.06	.88–1.29
Age	.99	.97–1.01	1.01	.97–1.04	1.01	.98–1.04
Months between Project VALOR assessment and C&P examination	1.01	1.00–1.02	1.02*	1.00–1.04	.99	.98–1.01

Note. C&P = compensation and pension; OR = odds ratio; CI = confidence interval; VALOR = Veterans After-Discharge Longitudinal Registry. * $p < .05$. ** $p < .01$.

SCID PTSD diagnosis had less than half the odds of White veterans of receiving a PTSD diagnosis from their C&P examiners (i.e., Black veterans were more likely to be false negatives than White veterans; $OR = .39$, $p < .001$, $CI = .20$ –.73, see Table 2).

When we reran these analyses using lifetime SCID PTSD diagnostic status, overall concordance was significantly different as a product of race, such that White veterans had higher rates of concordance than Black veterans (84.1% vs. 74.4%; $OR = 1.70$, $p = .04$, $CI = 1.03$ –2.81). This effect was due likely to the fact that although White veterans were still more likely to be false positives than Black veterans, this effect was no longer significant (61.5% vs. 40.0%; $OR = 3.32$, $p = .14$, $CI = .68$ –16.26). Consistent with our findings for current SCID PTSD, when examining lifetime SCID PTSD, Black veterans were again significantly more likely to be false negatives than White veterans (24.3% vs. 10.6%; $OR = .37$, $p < .001$, $CI = .21$ –.65).

Psychometric Testing, Race, and Diagnostic Concordance

Most disability exams (75.8% of exams overall; 80.3% of exams for Black veterans; 75.0% of exams for White veterans) did not include any psychometric testing. Of those that did, the most commonly used instruments, in order, were the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993; 15.4%), the

Minnesota Multiphasic Personality Inventory (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; 11.8%), the Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor, 1988; 10.6%), the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; 9.4%), and the Clinician-Administered PTSD Scale (Blake et al., 1995; 7.1%).

To examine whether the use of testing during PTSD disability exams moderated the association between race and diagnostic concordance, the sample was split based on whether psychometric testing was used during the disability exam conducted most proximately to the Project VALOR SCID interview. In the subgroup of veterans that was administered a psychometric test during their disability exam, race did not significantly affect the overall concordance between current SCID PTSD diagnosis and C&P examiner PTSD diagnosis ($OR = .92$, $p = .88$; $CI = .32$ –2.66; see Table 3). Interestingly, in this subgroup, White veterans were no more likely than Black veterans to be false positives (63.9% vs. 75.0%, respectively; $OR = .43$, $p = .56$, $CI = .03$ –7.28), and Black veterans were no more likely than White veterans to be false negatives (15.8% vs. 15.5%; $OR = 1.45$, $p = .62$, $CI = .34$ –6.24, see Table 3). In the subgroup that was not administered a psychometric test during their disability exam, overall concordance was again not significantly affected by race ($OR = .89$, $p = .69$; $CI =$

Table 3

Race as a Predictor of Concordance Between Current SCID PTSD Status and C&P PTSD Status for Cases in Which Psychometric Testing was Used

Variable	Concordance vs. discordance		False positive vs. true negative		False negative vs. true positive	
	OR	CI	OR	CI	OR	CI
White vs. Black	.92	.32–2.66	.43	.03–7.28	1.45	.34–6.24
Combat exposure	.97	.94–1.01	.89*	.80–1.00	1.05	1.00–1.10
Education	.85	.64–1.12	1.73	.89–3.35	1.17	.77–1.78
Gender	1.38	.63–3.06	5.12	.67–39.30	.48	.15–1.60
Income	1.04	.81–1.35	.74	.43–1.27	1.28	.86–1.91
Age	1.00	.96–1.04	.97	.89–1.06	1.00	.92–1.04
Months between Project VALOR assessment and C&P examination	1.00	.98–1.02	1.02	.97–1.07	1.01	.98–1.04

Note. C&P = compensation and pension; OR = odds ratio; CI = confidence interval; VALOR = Veterans After-Discharge Longitudinal Registry. * $p < .05$.

.52–1.56; see Table 4). However, unlike the subgroup that was administered a psychometric test during their disability exam, for this group, the previously described relationships remained significant. Specifically, White veterans were significantly more likely to be false positives than Black veterans (76.1% vs. 38.9%; $OR = 7.00, p < .001, CI = 2.21–22.14$), and Black veterans were significantly more likely to be false negatives than White veterans (21.3% vs. 7.2%; $OR = .29, p < .001, CI = .14-.61$; see Table 4).

Results of analyses with lifetime SCID PTSD diagnosis followed the same general pattern of results. For the subgroup that did not receive psychometric testing, White veterans demonstrated significantly more overall concordance than Black veterans (85.5% vs. 73.1%; $OR = 1.80, p = .04, CI = 1.02–3.17$). In addition, more White veterans (64.0%) than Black veterans (37.5%) were false positives and this effect was marginally significant ($OR = 8.35, p = .06, CI = .92–75.71$). Similar to both the overall lifetime SCID PTSD findings and the findings for current SCID PTSD, Black veterans were significantly more likely to be false negatives than White veterans (25.9% vs. 8.5%; $OR = .28, p < .001, CI = .15–.53$). However, for the subgroup that received psychometric testing, these effects disappeared. There was no longer a significant effect of race on overall concordance (79.3% of White veterans vs. 82.6% of Black veterans; $OR = .94, p = .93, CI = .28–3.25$), rate of false positives (50% of White veterans vs. 50% of Black veterans; $OR = 3.16, p = .67, CI = .02–656.64$), or rate of false negatives (14.3% of White veterans vs. 17.6% of Black veterans; $OR = 1.40, p = .64, CI = .35–5.62$).

SC Status

As expected, a Pearson correlation revealed a significant positive relationship between C&P PTSD status and the respondent’s SC status, $r = .73, p < .001$. Among respondents who were diagnosed with PTSD during their C&P exam, 91.9% were service connected for PTSD. Among respondents who were denied a PTSD diagnosis during the C&P exam, 86.6% were not service connected for PTSD. Further, when we examined the association between race and concordance between SCID PTSD status and SC status, the pattern of results was identical to those of race and concordance between SCID PTSD status and C&P PTSD status. Specifically, similar to the results reported earlier, there was no

significant relation between race and overall concordance ($OR = .90, p = .65, CI = .57–1.43$). However, race did significantly affect several important aspects of concordance, such that White veterans who did not meet SCID PTSD criteria were less likely than Black veterans who did not meet SCID PTSD criteria to be denied PTSD service connection (26.9% vs. 60.9%, respectively; $OR = 4.50, p < .001, CI = 1.71–11.82$), and Black veterans who met PTSD SCID criteria were less likely to receive PTSD service connection compared with White veterans who met PTSD SCID criteria (74.0% vs. 84.5%, respectively; $OR = .54, p = .03, CI = .31-.94$; see Table 5).

Results of the analyses examining concordance between SC status and lifetime SCID PTSD diagnostic status demonstrated a pattern of results nearly identical to those for C&P examiner PTSD diagnostic status and lifetime SCID PTSD diagnostic status. Specifically, overall concordance was again significantly different by race, such that White veterans demonstrated significantly higher levels of overall concordance than Black veterans (79.3% vs. 68.9%; $OR = 1.61, p = .04, CI = 1.01–2.57$). Although nonsignificant, White veterans had higher rates of false positives than Black veterans (62.1% vs. 40%; $OR = 3.34, p = .13, CI = .69–16.13$). Further, Black veterans were significantly more likely to be false negatives than White veterans (30.3% vs. 16.0%; $OR = .45, p < .001, CI = .27–.75$).

Discussion

We found that C&P PTSD diagnoses were concordant with current SCID PTSD status in 70.4% of cases and with lifetime SCID PTSD status in 77.7% of cases. These finding builds upon previous work by Marx et al. (2016), which demonstrated a similar concordance rate between SCID PTSD status and SC status using the same dataset. Although these results suggest that, in most cases, PTSD diagnoses rendered by C&P examiners are likely accurate, the number of false positives and false negatives does support prior concerns that PTSD disability exam outcomes may be incorrect for a significant minority of veterans. Our findings support concerns raised by others about the possible failings of the VA PTSD disability examination process (e.g., Frueh, Grubaugh, Elhai, & Buckley, 2007; Jackson et al., 2011; McNally & Frueh, 2013; OIG, 2005; Speroff et al., 2012; Worthen & Moering, 2011)

Table 4
Race as a Predictor of Concordance Between Current SCID PTSD Status and C&P PTSD Status for Cases in Which Psychometric Testing Was Not Used

Variable	Concordance vs. discordance		False positive vs. true negative		False negative vs. true positive	
	OR	CI	OR	CI	OR	CI
White vs. Black	.89	.52–1.56	7.00**	2.21–22.14	.29**	.14–.61
Combat exposure	.98**	.96–.99	.99	.95–1.02	1.05**	1.01–1.08
Education	1.08	.94–1.25	.88	.65–1.19	.99	.78–1.25
Gender	1.17	.75–1.85	1.01	.40–2.65	.74	.34–1.61
Income	.89	.77–1.03	1.10	.80–1.51	1.04	.82–1.32
Age	.99	.97–1.02	1.01	.97–1.05	1.01	.97–1.05
Months between Project VALOR assessment and C&P examination	1.01	1.00–1.02	1.02	1.00–1.04	.99	.97–1.00

Note. C&P = compensation and pension; OR = odds ratio; CI = confidence interval; VALOR = Veterans After-Discharge Longitudinal Registry.
** $p < .01$.

Table 5
Race as a Predictor of Concordance Between Current SCID PTSD Status and SC Status

Variable	Concordance vs. discordance		False positive vs. true negative		False negative vs. true positive	
	OR	CI	OR	CI	OR	CI
White vs. Black	.90	.57–1.43	4.50**	1.71–11.82	.54*	.31–.94
Combat exposure	.97**	.95–.98	.98	.95–1.01	1.05**	1.03–1.08
Education	1.10	.97–1.23	.92	.72–1.18	.91	.77–1.08
Gender	1.32	.92–1.90	1.05	.50–2.22	.72	.43–1.21
Income	.98	.88–1.10	.84	.65–1.08	1.06	.91–1.25
Age	.99	.98–1.01	1.00	.97–1.03	1.01	.99–1.04
Months between Project VALOR assessment and C&P examination	1.01	1.00–1.01	1.01	1.00–1.03	.99	.98–1.01

Note. C&P = compensation and pension; OR = odds ratio; CI = confidence interval; VALOR = Veterans After-Discharge Longitudinal Registry.
** $p < .01$.

and indicate that we should be concerned about both the number of veterans who may have PTSD who are not given the diagnosis by a C&P examiner (and are, therefore, also most likely denied the associated benefits including recognition that their disorder is military service related, access to free health care, and potential monetary compensation) and the number of veterans who are diagnosed with PTSD by a C&P examiner and receiving associated benefits when they may not be entitled to do so. Although questions and concerns about the latter have been discussed at great length, much less attention has been paid to the former even though research has shown that veterans receiving PTSD disability benefits report greater reductions in PTSD symptoms as well as less poverty and less homelessness than those who are denied these benefits (Murdoch et al., 2011).

Importantly, our study cannot provide a definitive explanation for discrepancies between C&P examiner PTSD diagnoses and SCID PTSD diagnoses. Possible explanations include insufficient knowledge or inadequate disability examination practices among C&P examiners, patient or institutional pressures, atypical symptom presentation, examiner biases, and inaccurate symptom reporting by veterans during either the disability exam or the SCID interview. In addition, because in many cases the SCID assessment occurred many months after the disability exam, it is entirely possible that some discrepancies may be the result of natural symptom fluctuations over time and remission or reduction of symptoms as function of treatment or other factors (though time from the disability exam to the SCID assessment was controlled for in our analyses and we also used the lifetime SCID PTSD diagnosis in subsequent analyses and those results generally supported those using the current SCID PTSD diagnosis).

Perhaps even more concerning than the discovery of these diagnostic discrepancies per se is the finding that, among veterans diagnosed with PTSD by an independent evaluator, Black veterans were significantly less likely than White veterans to receive both a C&P PTSD diagnosis and to be given PTSD service connection status. Further, among veterans not meeting diagnostic criteria for SCID PTSD, Black veterans tended to be more likely than White veterans to be denied both C&P PTSD status and PTSD service connection status. These results are consistent with our hypotheses as well as with findings from other studies that have documented racial disparities in VA care (Rosenheck et al., 1995), the amount of compensation given for service connected PTSD (Murdoch et

al., 2003), and satisfaction with VA PTSD disability exams (Rosen et al., 2013).

Although our results provide evidence of racial disparities in the PTSD disability exam and PTSD service connection rating process, the source of such disparities remains unclear. One possibility could be implicit racial biases (i.e., beliefs that occur without conscious awareness which are frequently contrary to an individual's explicit beliefs; Devine, 1989) among C&P examiners. Research has demonstrated that the existence of implicit bias from the automatic activation of race and other stereotypes can influence judgment of, and behavior toward, individuals from a stereotyped group (Devine & Plant, 2012). Medical professionals, who work under conditions of uncertainty and time pressure, may be more likely to rely on stereotypes in decision-making (Chapman, Kaatz, & Carnes, 2013); this may make them vulnerable to their implicit bias. Indeed, a number of studies have documented the presence of implicit racial biases among medical professionals, despite the absence of explicit bias (Cooper et al., 2012; Green et al., 2007; Sabin & Greenwald, 2012; Sabin, Nosek, Greenwald, & Rivara, 2009). Further, research has suggested that these implicit racial biases can result in health care disparities (Chapman et al., 2013; Cooper et al., 2012).

Implicit biases, in turn, may influence how Black patients perceive their providers and interactions with them. Specifically, research indicates that stereotype threat (i.e., a situation in which one is "at risk of confirming, as self-characteristic, a negative stereotype about one's group;" Steele & Aronson, 1995, p. 797), may occur in health care environments. As such, if Black patients perceive cues that suggest implicit biases in their providers, these cues may threaten clinical interactions and patient adherence (Aronson, Burgess, Phelan, & Juarez, 2013). For instance, Black patients tend to perceive physicians with greater implicit racial bias, even when they have positive explicit racial attitudes, as less warm and friendly (Penner et al., 2013) and have less trust and confidence in them (Blair et al., 2013; Cooper et al., 2012). Importantly, patients with these perceptions may be less likely to cooperate with their doctors (Penner et al., 2013) or follow through on their recommendations (e.g., Bogart, Wagner, Galvan, & Banks, 2010; Dovidio et al., 2008). In the context of a VA PTSD disability examination, these interpersonal dynamics are important to be mindful of, as veterans who are suspicious, uncooperative, and/or unwilling to answer certain questions about their legal

histories or other sensitive topics may be perceived by their examiners as devious or dishonest about their reported PTSD symptoms and their association with military service for secondary gain purposes.

Health care systems and institutional factors may also contribute to disparities; for instance, studies have found that Black and White patients tend to seek care in different settings (because of factors such as geography and socioeconomic status), and that Black patients are more likely to receive care in settings with fewer resources or in which providers are not as well trained (Bach, Pham, Schrag, Tate, & Hargraves, 2004). These sources are especially important to consider in light of the OIG investigation (OIG, 2005), which indicated that the state where disability exams are given influenced results. Previous research shows that the average rate of PTSD SC granted varies widely by region (Murdoch, Hodges, Cowper, & Sayer, 2005); therefore, it is also possible that the racial differences found in this study are consequences of regional differences in the C&P disability exam process. The relatively small proportion of Black participants in our sample prevented us from conducting follow-up analyses on the impact of geographic region on racial disparities found in concordance rates. Future research should study the provider, institution, and regional level characteristics that may contribute to the diagnostic accuracy of C&P examinations for PTSD.

We also found that the use of psychometric testing during a disability exam influenced the association between race and diagnostic concordance. For the disability exams in which psychometric testing was not used, discrepancies continued to emerge which favored White veterans over Black veterans. In contrast, in the disability exams in which psychometric testing was used, there was no significant relationship between race and diagnostic concordance. These findings were consistent with our hypothesis that, especially in the absence of psychometric testing, there is a discrepancy in PTSD-related outcomes between Black and White veterans in the VA disability process.

Our findings suggest that more widespread use of psychometric testing in VA PTSD disability exams may help to reduce the racial differences found in both C&P examiner and SC concordance. It may be that the use of psychometric measures of PTSD reduces the possibility that the examiner will be influenced by factors other than those pertinent to the diagnostic process (e.g., implicit racial bias). Consistent with this possibility, research has suggested that the effect of implicit bias can be reduced through individuating (i.e., applying conscious effort to focus on specific information about an individual; Chapman et al., 2013). One method for individuating is providing specific diagnostic information about an individual patient (e.g., test results); this practice has been shown to reduce implicit bias in diagnostic decisions specifically (Chapman, Tashkin, & Pye, 2001). The standardized use of empirically supported psychometric tests in VA PTSD disability exams is also consistent with prior recommendations to reduce health disparities by improving the quality of medical care (McGuire & Miranda, 2008). Unfortunately, the use of such tests in VA PTSD disability exams is the exception, not the rule. We found that only 24.2% of C&P exams used a psychometric test of some form, consistent with previous survey results in which the majority of C&P examiners reported “rarely” or “never” using testing (Jackson et al., 2011).

The findings of racial differences in concordance are particularly important to address due to the high correlation between the outcome of the disability exam and SC status. This suggests that a failure to use psychometric tests in PTSD disability exams may be directly responsible for fewer Black veterans receiving the disability benefits owed to them, and a greater number of White veterans without PTSD erroneously receiving benefits. Given that SC status has been associated with reduced rates of impoverishment (Murdoch et al., 2005) and homelessness (Edens, Kaspro, Tsai, & Rosenheck, 2011), such a pattern is highly detrimental to Black veterans and their families.

There are several limitations to this study. First, the current sample is not representative of all VA patients. Only veterans of OEF/OIF/OND were included in the present analyses, all participants had previously undergone a mental health assessment at a VA facility, and veterans with probable PTSD were oversampled at a ratio of 3:1. In addition, it is possible that the relationship between race and diagnostic concordance found here is better explained by a third variable that was not examined, such as the region in which the exam was conducted. Furthermore, because respondents were not randomly assigned to the psychometric testing group, it is possible that the psychometric testing variable is actually capturing some other feature of the exam process, such as the training of the C&P examiner, the number of evaluations a veteran has completed, or the amount of time allowed for an examination. Future research is needed to explore these possibilities.

Our results indicate that racial disparities may account for the 30% discordance observed between the VA PTSD disability exam diagnosis and an independently administered semistructured PTSD diagnostic interview. Psychometric testing during PTSD disability exams shows promise as a means of reducing these racial differences. Future research should continue to examine the impact of psychometric testing on the VA PTSD disability process. Because the C&P exam results are a key component in determining whether a veteran receives PTSD SC, findings of racial disparities in concordance involving C&P exams may also translate into racial differences in rates of PTSD SC. Such a disparity would have important financial implications for veterans seeking disability benefits through the C&P exam process. Therefore, implementation of psychometric testing and other clinical practices that can improve the validity of disability exam outcomes and eliminate racial differences in the VA disability exam process is necessary.

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Received February 25, 2016

Revision received June 21, 2016

Accepted July 1, 2016 ■