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Predictors of Mental Health and Medical Service Use in Veterans Presenting With Combat-Related Posttraumatic Stress Disorder

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Predictors of health service use were assessed using archival data of 87 male combat veterans with combat posttraumatic stress disorder (PTSD) at an outpatient Veterans Affairs Medical Center PTSD clinic. Predictor variables included predisposing demographic, illness/need, and enabling resource variables. Criterion variables included indexes of health service use. Results revealed no significant predictors of PTSD-related or primary care health service consumption. Lower scores on measures of symptom overreporting and anxiety predicted specialty care service use. Race (Caucasian) and marital status (currently married) predicted prescription of psychiatric medications. Clinical implications are considered, with a focus on the impact of racial group status as well as symptom exaggeration on health service utilization in PTSD patients.

Through the examination of numerous reports, evidence is emerging that health care service use, both in medical and mental health settings, can be predicted with some degree of certainty from patients' medical and psychiatric histories, demographic characteristics, and scores on psychological tests. However, few studies have examined predictors of service use in trauma victims diagnosed with posttraumatic stress disorder (PTSD).

Trauma Exposure and PTSD

National surveys suggest that 40% to 70% of the general population has experienced traumatic events in their lifetimes. Specifically, life-threatening accidents, robbery, and witnessing injury or murder were most prevalent for men and women, with combat exposure additionally prevalent for men (Breslau, Davis, Andreski, & Peterson, 1991; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (*DSM-IV;* American Psychiatric Association, 1994) diagnostic criteria for PTSD involve the following: (a) exposure to a traumatic event that threatens death, serious injury, or the physical integrity of oneself or others and involves intense feelings of fear, helplessness, or horror; (b) reexperiencing the traumatic event (e.g., dreams, flashback episodes); (c) emotional numbness and attempts to avoid people, places, or thoughts that may be associated with the event; (d) increased arousal, including anger, insomnia, or an exaggerated startle response; (e) symptom duration of at least 1 month; and (f) associated functional impairment. Lifetime estimates suggest that PTSD probably affects between 7% and 9% of the general population (Breslau et al., 1991; Kessler et al., 1995; Norris, 1992). Studies have demonstrated that 15% of Vietnam combat veterans are diagnosed with current PTSD, with an additional 11% of these veterans in the subclinical range of PTSD (Kulka et al., 1990).

One well-established framework for exploring determinants of health service use is the behavioral model of health service use (Andersen, 1995; Andersen & Newman, 1973). The behavioral model specifies that a combination of "predisposing," "illness/need," and "enabling" characteristics determine

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the likelihood and quantity of use of health care services by individuals. Predisposing variables include personal history and demographic characteristics that exist prior to the illness. Illness/need factors involve diagnostic and severity characteristics of the illness. Enabling factors include variables related to one's ability and resources to seek services. The behavioral model has been used successfully to determine health service use in several trauma victim–PTSD studies (Koenen, Goodwin, Struening, Hellman, & Guardino, 2003; Rosenheck & Fontana, 1994, 1995).

Predisposing Health Service Use Factors in Trauma Victims and PTSD Patients

Several predisposing factors have been examined for determining service use in trauma victims and PTSD patients. Racial group status has produced mixed results, with numerous studies revealing no association for overall mental health service use in trauma victims or PTSD patients (Boscarino, Galea, Ahern, Resnick, & Vlahov, 2002; Frueh, Elhai, Monnier, Hamner, & Knapp, 2004; Rosenheck & Fontana, 1996). Some studies find decreased use in African Americans and Hispanics (Rosenheck & Fontana, 1994) or more use in Caucasians (Koenen et al., 2003; New & Berliner, 2000; Ullman & Brecklin, 2002). In terms of medical care, African American Vietnam veterans have shown a greater likelihood to use general health care from Veterans Affairs (VA) medical centers (Rosenheck & Massari, 1993) and appear to enroll in more medical (Schnurr, Friedman, Sengupta, Jankowski, & Holmes, 2000) and substance abuse (Rosenheck & Fontana, 1996) sessions than other races.

Studies of trauma survivors and PTSD patients have revealed that age is either unrelated to psychiatric service use (Frueh, Elhai, Hamner, et al., 2004; New & Berliner, 2000; Z. Solomon, 1989) or that older age predicts increased use (Boscarino et al., 2002; Calhoun, Bosworth, Grambow, Dudley, & Beckham, 2002; Goto, Wilson, Kahana, & Slane, 2002; Koenen et al., 2003). Marital status has revealed no association with psychiatric service use in some studies (Z. Solomon, 1989; Ullman & Brecklin, 2002), whereas other studies have revealed increased use among cohabitating or previously married persons (Boscarino et al., 2002; Koenen et al., 2003; Norris, Kaniasty, & Scheer, 1990). Marital status has not been examined for its role in medical service use. Last, most studies reveal no relationship between educational level and psychiatric service use (Boscarino et al., 2002; Goto et al., 2002; Koenen et al., 2003; Z. Solomon, 1989).

Illness/Need Health Service Use Factors in Trauma Victims and PTSD Patients

Illness/need factors have predicted service use in victims of traumatic events. Most trauma studies demonstrated that PTSD diagnoses (Boscarino et al., 2002; Franklin, Young, & Zimmerman, 2002; Freedy, Resnick, Kilpatrick, Dansky, & Tidwell, 1994; New & Berliner, 2000; Rosenheck & Fontana, 1995) and severity (Calhoun et al., 2002; Goto et al., 2002; Z. Solomon, 1989; Weine et al., 2000) have been related to increased mental health service use. PTSD diagnoses have also predicted increased medical care (Marshall, Jorm, Grayson, Dobson, & O'Toole, 1997; Marshall, Jorm, Grayson, & O'Toole, 1998).

A depression diagnosis (Boscarino et al., 2002) and depression severity have been related to greater psychiatric service consumption (Goto et al., 2002; Norris et al., 1990; Weine et al., 2000). Greater depression severity has also been linked with increased medical care (Marshall et al., 1997, 1998). Higher levels of anxiety and phobias have been associated with greater medical use (Marshall et al., 1997, 1998). Health-related problems are associated with increased mental heath (Z. Solomon, 1989; Weine et al., 2000) and medical service use (Marshall et al., 1997, 1998).

Enabling Health Service Factors in Trauma Victims and PTSD Patients

Enabling factors have also revealed health service use prediction among trauma victims. Receipt of VA disability payments has revealed increased outpatient medical service use (Calhoun et al., 2002). Unemployment has predicted greater psychiatric (Koenen et al., 2003) and general health service use (Rosenheck & Massari, 1993). Household income has shown no relation to mental health service use (Boscarino et al., 2002).

Purpose of the Present Study

In the present study, we attempted to find the best predictors of health service use among combat PTSD patients. This article represents a secondary analysis of previously explored data, where we examined differences in psychopathology and service use that were based solely on the independent variables of race (Frueh, Elhai, Monnier, et al., 2004) and disability-seeking status (Grubaugh, Elhai, Monnier, & Frueh, in press). In the present study, however, we examine the contribution of a variety of predisposing,

illness/need, and enabling independent variables together to health service use in a sample of combat veterans with PTSD who were already involved with the VA health care system. This study is somewhat unique. Although several studies have examined predictors of service use in trauma victims, fewer studies have examined this issue in PTSD patients on a continuum (number of sessions attended) rather than as a dichotomous variable (did vs. did not seek help), which is important when studying treatment-seeking individuals. Even fewer studies have explored this issue within the context of the behavioral model of health service use (Andersen, 1995; Andersen & Newman, 1973). This study is important in providing a better understanding of the characteristics of PTSD patients who rely on the VA for increased health care and in understanding the possible factors that may interfere with the use of these services.

Method

Participants

Archival data were drawn from records supplied by a VA Medical Center located in the southeastern United States. Patient records included those of male veterans (age 18 years and above) who consecutively presented to the VA's outpatient specialty program for treatment of combat-related PTSD. Institutional Review Board (IRB) approval was obtained, and the study was in compliance with the ethical treatment of human subjects. Each patient completed a full clinical evaluation, but only those diagnosed with combat-related PTSD (using a structured PTSD interview, described below) were included in this study.

The sample included 100 PTSD-diagnosed combat veterans evaluated between approximately January 1998 and November 1999. Additional (non–mutually exclusive) Axis I diagnoses were provided on the basis of nonstandardized clinical interviews and included major depressive disorder (80.0%), current substance abuse disorders (42.4%), and anxiety disorders other than PTSD (16.7%), paralleling rates in other combat PTSD samples (Keane & Wolfe, 1990).

Age in the sample ranged from 28 to 78 years, with a mean of 53.3 ($SD = 9.2$). Years of education completed ranged from 7 to 18 years ($M = 12.5$, $SD = 2.2$). Annual income ranged from \$0 to \$72,000 ($M = \$21{,}827$, $SD = \$18{,}254$). Race was primarily Caucasian (53.7%) or African American (42.7%). Slightly less than half were employed (40.7%). Many (69.7%) were married at the time of evaluation. Most had served in the U.S. Army (70.3%) or Marines (16.5%). The majority served in the Vietnam (79%), Korean (9%), or 1991 Gulf War (5%). The majority (66.7%) reported applying or intending to apply for medical or psychiatric disability payments at the VA.

Procedure and Instruments

All patients were diagnosed according to *DSM-IV* criteria by the VA's PTSD clinical team, using structured PTSD interviews (Clinician-Administered PTSD Scale; Blake et al., 1990), nonstandardized clinical interviews for other Axis I and Axis II disorders, military history interviews, psychosocial history interviews, and self-report measures gathered as part of ongoing research protocols. Instruments used pertaining to the present study are described below.

Clinician-Administered PTSD Scale (CAPS). The CAPS (Blake et al., 1990) is a structured clinical interview that rates the frequency and intensity of the 17 PTSD symptoms on the basis of *DSM-IV* standards. Reports on the CAPS indicate strong interrater reliability (.92 to .99), high internal consistency (.73 to .85), and high convergent validity (Weathers & Litz, 1994). The original CAPS scoring rule (Blake et al., 1990) was used for diagnosing PTSD (i.e., both frequency ≥ 1 and intensity ≥ 2 were required for a symptom to be counted as present, according to *DSM-IV*'s PTSD criteria).

Minnesota Multiphasic Personality Inventory–2 (MMPI-2). The MMPI-2 (Butcher et al., 2001) is a widely used 567-item, true–false self-report instrument used to generate behavioral and clinical data. Test–retest reliability estimates range from .58 to .92 for the clinical scales (Butcher et al., 2001). Dahlstrom and colleagues (Dahlstrom, Welsh, & Dahlstrom, 1975) cited 6,000 studies investigating MMPI (Hathaway & McKinley, 1943) profile patterns, with new studies annually providing extensive evidence for the MMPI-2's construct validity. The present study used K-corrected raw scores for all MMPI-2 scales.

Beck Depression Inventory (BDI). The BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a widely used self-report measure of depression, containing 21 items. Reliability has been demonstrated, with mean internal consistency estimates of .86 across studies (Beck, Steer, & Garbin, 1988) and .90 found in a previous VA PTSD sample collected by Monnier, Elhai, Frueh, Sauvageot, and Magruder (2002). The BDI has also been well validated, with concurrent validity ranging from .55 to .96 (Beck et al., 1988). The total BDI score was used in analyses.

Mississippi Combat PTSD Scale (M-PTSD). The M-PTSD (Keane, Caddell, & Taylor, 1988) is a self-report measure of combat-related PTSD symptoms,

containing 35 Likert-format items. The M-PTSD has excellent internal consistency (.94) and test–retest reliability (.97 over a 1-week period; Keane et al., 1988), with M-PTSD data from a previous VA PTSD sample collected by the authors yielding good internal consistency (.82; Monnier et al., 2002). The M-PTSD has demonstrated excellent sensitivity (.93) and specificity (.89), with an overall hit rate of .90 in predicting PTSD (Keane et al., 1988). The total M-PTSD score was used in analyses.

Dissociative Experiences Scale (DES). The DES (Bernstein & Putnam, 1986) is a self-report measure of dissociative symptoms, containing 28 items, using a visual analogue response format. In the present study we used a revised DES with a fixed-response format (DES-FRF), demonstrating strong internal consistency (.95), good alternate forms' reliability with the original DES (r = .71), and a significantly lower inverse relationship with intelligence (r = –.18) compared with the original DES (r = –.42; Frueh, Johnson, Smith, & Williams, 1996). DES-FRF data on a previous VA PTSD sample collected by Monnier et al. (2002) yielded high internal consistency (.93). The total DES-FRF score was used, and we henceforth refer to it as *DES*.

Chart review: Service utilization and prescribed psychiatric medications. Service use data were drawn from participants' computerized medical charts, as this method is more accurate than patient self-report in gathering information on service use (Roberts, Bergstrahl, Schmidt, & Jacobsen, 1996; Wallihan, Stump, & Callahan, 1999). Charts were examined for the types of VA health services used within the 365 days following initial PTSD evaluation. Information on the number of clinic visits in the PTSD outpatient, primary care, and specialty care (e.g., physical therapy, dermatology, urology, etc., but not including mental health–related visits) clinics were gathered. (The use of number of clinic visits is an index of service-use intensity that is frequently used in research on treatment-seeking individuals). In addition, we were interested in the total number of psychiatric medications prescribed, as an indirect proxy indicator of service use.

Statistical Analysis

Participants were excluded if their MMPI-2 profiles were invalidated because of at least one of the following criteria: (a) True Response Inconsistency scale T scores > 100 (suggesting a mostly true or false response trend); (b) Variable Response Inconsistency scale T scores > 80 (suggesting a mostly random response trend); or (c) Cannot Say raw scores > 15 (suggesting a significant number of missing responses). These criteria resulted in the exclusion of 13 veterans, leaving 87 combat veterans with PTSD included in the study.

Four hierarchical linear regression analyses were conducted, separately predicting number of visits to the PTSD, primary care, and specialty care clinics and number of psychiatric medications prescribed. Predictor variables were entered sequentially in the following three blocks, with mean values replacing missing values: (a) predisposing factors, including age, educational level, race (1 = *African American*, 0 = *Caucasian*), and marital status (1 = *not currently married*, 0 = *currently married*); (b) illness/need factors, including scores on the BDI, M-PTSD, and MMPI-2 measures of symptom overreporting (Fptsd; Elhai et al., 2002), somatization (Hs), anxiety (Pt), and psychosis (Sc); and (c) enabling factors, including annual income, mileage to the VA, employment status (1 = *employed*, 0 = *unemployed*), and current seeking or intent to seek disability benefits for any medical or psychiatric condition (1 = *yes*, 0 = *no*).

Results

In terms of descriptive statistics for the sample, number of PTSD visits ranged from 0 to 58 (M = 13.15, SD = 12.92). Number of primary care visits ranged from 0 to 58 (M = 3.44, SD = 6.85). Specialty care visits ranged from 0 to 21 (M = 3.25, SD = 3.76). Number of psychiatric medications prescribed ranged from 0 to 10 (M = 2.43, SD = 1.78).

The first hierarchical regression, predicting total number of PTSD-related sessions, yielded no significant F change at Block 1 (R^2 = .06), Block 2 (R^2 = .13), or Block 3 (R^2 = .20; all ps > .05). The second regression, predicting number of primary care visits, also yielded no significant incremental increase in F at Block 1 (R^2 = .01), Block 2 (R^2 = .08), or Block 3 (R^2 = .11; all ps > .05). Thus, for PTSD-related as well as primary care services, use of services was not significantly predicted by demographic predisposing, illness/need, or enabling variables.

The third regression analysis, predicting number of specialty care visits, although not significant at Block 1 (R^2 = .05, p > .05), was significant at Block 2 (R^2 = .21, p = .03), but was not significant at Block 3 (R^2 = .22, p > .05). Table 1 displays regression coefficients and corresponding t-test values for predictors in the final model after entry of all predictor blocks. Thus, although predisposing variables did not predict specialty care service use, illness/need variables did incrementally contribute variance, but en-

Table 1
Final Hierarchical Regression Model Predicting Total Number of Specialty Care Sessions

Variable	*B*	*SE B*	β	*t*(72)
Age	0.05	0.05	.12	0.95
Marital status	−0.16	1.37	−.01	−0.11
Education	−0.39	0.26	−.16	−1.48
Race	−0.51	0.97	−.07	−0.53
BDI	0.00	0.07	.01	0.03
M-PTSD	0.03	0.03	.13	0.88
Fptsd	−0.55	0.22	−.35	−2.54*
Hs	0.02	0.11	.03	0.18
Pt	−0.33	0.14	−.51	−2.34*
Sc	0.15	0.11	.35	1.38
Income	0.00	0.00	−.02	−0.16
Employment	0.30	1.18	.03	0.26
Disability seeking	0.17	1.66	.01	0.10
Mileage to VA	0.00	0.00	.11	0.94

Note. $N = 87$. BDI = Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); M-PTSD = Mississippi Combat Posttraumatic Stress Disorder Scale (Keane, Caddell, & Taylor, 1988); Fptsd = symptom overreporting (Elhai et al., 2002); Hs = somatization; Pt = anxiety; Sc = psychosis; VA = Veterans Affairs.
*$p < .05$.

abling variables did not enhance predictions. Significant predictors in the final model were Fptsd and Pt, both of which were negatively correlated with specialty care service use.

The fourth regression, predicting number of psychiatric medications prescribed, was significant in Block 1 ($R^2 = .18, p = .003$), but was not significant at Block 2 ($R^2 = .20, p > .05$) or Block 3 ($R^2 = .21$, $p > .05$; see Table 2 for the final model). Thus, although predisposing variables predicted number of psychiatric medications prescribed, neither illness/need nor enabling variables incrementally added variance. Significant predictors in the final model were marital status and race, with those being currently married and Caucasian prescribed more psychiatric medications.

Discussion

Overall, we found that the behavioral model of health service use was not able to predict PTSD-related or primary care health service consumption. However, the model's illness/need factors predicted specialty care service use, primarily from lower scores on measures of symptom overreporting and anxiety. Furthermore, the model's predisposing factors predicted the number of psychiatric medications prescribed, with more psychiatric medications prescribed to those who were currently married and Caucasians.

PTSD-Related Service Use Prediction

We were able to find only one study that explored predictors of PTSD-specific service use. In contrast with our findings, Rosenheck and Fontana (1996) revealed that the predisposing variable of race was a significant predictor of VA PTSD services. Specifically, African American veterans evaluated at VA PTSD clinics used fewer sessions than other racial groups. Interestingly, this relationship was due partly to a decreased duration of treatment found in African Americans compared with other racial groups. However, the present study did not reveal racial group status as a significant predictor of PTSD-related service use. Further research should confirm an association between race and PTSD service use.

Primary Care and Specialty Care Service Use Prediction

In terms of medical services used, our study revealed interesting but mixed results. Although no significant predictors of primary care service use were found, specialty care services were predicted by illness variables.

Results revealed that PTSD patients with lower scores on Fptsd (suggesting less symptom overreporting) used more specialty care services. Overreported PTSD is a significant clinical concern in VA

Table 2
Final Hierarchical Regression Model Predicting Total Number of Psychiatric Medications Prescribed

Variable	*B*	*SE B*	β	*t*(72)
Age	−0.04	0.02	−0.24	−0.19
Marital status	−1.94	0.65	−0.37	−3.00**
Education	−0.03	0.13	−0.03	−0.26
Race	−1.31	0.46	0.36	−2.86**
BDI	−0.02	0.03	−0.12	−0.72
M-PTSD	−0.01	0.02	−0.07	−0.43
Fptsd	−0.05	0.10	−0.07	−0.51
Hs	0.02	0.05	0.06	0.38
Pt	−0.01	0.07	−0.03	−0.15
Sc	0.03	0.05	0.13	0.52
Income	0.00	0.00	−0.08	−0.68
Employment	−0.21	0.56	−0.04	−0.37
Disability seeking	−0.45	0.79	−0.07	−0.57
Mileage to VA	−0.00	0.00	−0.07	−0.55

Note. $N = 87$. BDI = Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); M-PTSD = Mississippi Combat Posttraumatic Stress Disorder Scale (Keane, Caddell, & Taylor, 1988); Fptsd = symptom overreporting (Elhai et al., 2002); Hs = somatization; Pt = anxiety; SC = psychosis; VA = Veterans Affairs.
**$p < .01$.

settings and is thought to frequently occur among VA patients evaluated for PTSD, with high financial incentives (e.g., disability payments) possible for successful malingerers and no reliable means of detecting PTSD malingering (Frueh & Elhai, 2002). Fptsd is a measure of malingered PTSD, normed on a large sample of combat veterans diagnosed with PTSD, demonstrating superior efficacy in distinguishing simulated from genuine combat-related PTSD than previous MMPI-2 malingering scales (Elhai et al., 2002). Thus, the present findings suggest that veteran patients with less exaggerated PTSD symptomatology are more likely to actually use the VA's specialty care (although not primary care) medical services than those with more exaggerated symptomatology, perhaps because veterans exaggerating their mental health symptoms when being evaluated for PTSD may be doing so for reasons other than genuine health care seeking. Future studies should examine the relationships among symptom overreporting, psychiatric disability seeking, and health service use.

Furthermore, lower scores on Pt were associated with more specialty care service use, suggesting that less anxious veterans actually used more specialty care services. This finding is inconsistent with those of Marshall and colleagues (Marshall et al., 1997, 1998), who found that higher levels of anxiety and phobias were associated with greater medical use in Vietnam combat veterans. However, those previous studies examined community samples of Vietnam veterans (not solely PTSD-diagnosed veterans), rather than clinical samples seeking treatment, and used structured interview ratings of anxiety disorders. The present study suggests that perhaps more anxious PTSD patients (according to the MMPI-2's Pt scale) are avoidant of some forms of medical treatment (found in specialty care) or seek different forms of treatment. However, this relationship between anxiety and health service use intensity in combat PTSD patients should be further explored by health services investigators.

Other studies with samples of trauma victims and/or PTSD patients have found support for predicting medical service use by predisposing variables, including victimization severity, marital status, and older age (Koss, Koss, & Woodruff, 1991); African American race (Schnurr et al., 2000); less education (Calhoun et al., 2002; Marshall et al., 1998); and combat exposure intensity (Marshall et al., 1998; Rosenheck, Leda, & Gallup, 1992). Medical service use studies have also found support for illness/need predictors, including PTSD diagnoses (Marshall et al., 1998; Schnurr et al., 2000), medical diagnoses, depression, anxiety, and phobias (Marshall et al., 1997, 1998). Last, research shows a link between the enabling variable of receipt of medical disability payments and medical service use (Calhoun et al., 2002). However, none of these studies subclassified medical services into primary or specialty care visits, potentially neglecting important prediction patterns. Furthermore, on the basis of a recent comprehensive literature review we conducted (Elhai, North, & Frueh, in press), we found that the majority of these significant predictors represented isolated findings and that the only medical service use predictor that was consistently found across studies was the diagnosis of PTSD.

It is curious that MMPI-2 illness/need variables involving health concerns (Hs and Hy) were not significantly related to primary or specialty care use. This finding is puzzling, because previous community studies of Vietnam combat veterans have found that health-related problems are linked with greater medical care (Marshall et al., 1997, 1998). In fact, the Hs and Hy scales demonstrate robust validity as measures of health problems in other studies (Greene, 2000). One explanation for this unexpected finding is that with current trends in the VA (and elsewhere) involving a primary care "gatekeeping" model of access to specialty services, patients presenting with more health-related distress may not necessarily obtain more medical sessions because of the high demand for primary care appointments and gatekeeping access to specialty care appointments. However, we do not have evidence to support this explanation.

Psychiatric Medication Prescriptions

Marital status predicted the prescription of psychiatric medications, with those currently married prescribed a greater number of medications. However, we do not have an explanation for this finding and were unable to support this finding in the literature. Race was also related to psychiatric medication prescriptions, with Caucasians prescribed more psychiatric medications overall. One possibility is that Caucasians are more likely to use health services that may result in being prescribed psychiatric medications. However, this was not the case in our data, as we failed to reveal a relationship between race and medical service use. In fact, some studies have shown that African Americans are just as (if not more) likely to use VA mental health services as Caucasians (even after controlling for other predisposing, illness/need, and enabling variables; Rosenheck & Fontana, 1994; Rosenheck & Massari, 1993). Interestingly, our racial differences may not be attributable to differences in psychiatric symptom severity, as studies consis-

tently demonstrate that African American and Caucasian combat veterans evaluated for PTSD yield few differences in psychopathology (Frueh, Brady, & de Arellano, 1998; Frueh, Elhai, Monnier, et al., 2004; Monnier et al., 2002), with only a circumscribed finding sometimes found involving more dissociative or psychotic symptoms among African American veterans with PTSD (Frueh et al., 1998; Frueh, Smith, & Libet, 1996; Monnier et al., 2002). Nonetheless, these findings regarding marital status and race as predictors of psychiatric medication prescription should be further explored in future studies.

Behavioral Model of Health Service Use

In summary, only illness/need variables of the behavioral model predicted specialty care service consumption, and only predisposing variables predicted psychiatric medication prescriptions. Interestingly, these significant factors of predisposing and illness variables are the ones that are least mutable and most resistant to change in the behavioral model, with enabling factors possessing the most potential for mutability (Andersen, 1995). The fact that the most immutable factors of the model predicted health service use among PTSD patients underscores reports indicating that PTSD is associated with significantly higher treatment costs than other conditions (S. D. Solomon & Davidson, 1997; Walker et al., 2003).

Limitations and Future Directions

Several limitations apply to the current study. First, our health service use analyses only examined services used within 1 year after participants' PTSD evaluations. We did not examine predictors of long-term service use subsequent to the 1st year after PTSD evaluations. Second, our service use data only included services used within the VA to which patients were evaluated for PTSD. Thus, we were unable to include services used at other VAs or at non-VA clinics. However, veterans with PTSD are considerably more likely to use mental health and medical services within rather than outside the VA system and consider the VA as their usual health care source (Rosenheck & Fontana, 1995). In addition, evidence suggests that veterans with PTSD are satisfied with the VA health services they receive and therefore likely to rely on them (Frueh et al., 2002, 2003). Third, because we do not have follow-up data on the psychiatric status of veterans after their PTSD evaluations, we cannot ascertain whether greater amounts of service use are related to more or less functional impairment over time.

Future research studies should examine predictors of long-term health care service use, perhaps up to 5 years after clinic enrollment. Predisposing, illness/need, and enabling factors should be further examined, with a more detailed focus on modern enabling indexes of health insurance that would be consistent with current health care issues. In addition, studies could further examine why PTSD-diagnosed African American veterans are prescribed fewer psychiatric medications, to ensure that African Americans have a more fair advantage of taking full benefit of psychiatric treatment services offered within the VA system. Future studies could look at both patient- and provider-level factors. For example, cultural attitudes of African Americans regarding psychiatric medications and treatment could be examined, as well as provider perceptions of patients' receptivity to and compliance with treatment recommendations.

Conclusions

Some racial disparities in service use may be operating within VA PTSD clinics, with African Americans revealing decreased access to psychiatric medications. Furthermore, veterans who exaggerate their PTSD yet appear less anxious appear to use a disproportionate amount of medical treatment, relative to veterans presenting with genuine psychiatric problems.

The findings from the present study have significant clinical implications for VA service delivery to PTSD patients. Our findings provide information on how accessible treatment services are to some subgroups of VA PTSD patients, on the basis of marital status, race, symptom overreporting, and anxiety levels. This information can be useful to VA medical system administrators and policymakers, in increasing health care access to underserved groups. In addition, our findings may suggest conditions under which mental health interventions work for PTSD patients, with implications for clinical treatment decisions (e.g., deemphasizing treatment choices that may require more intensive intervention, for patient demographic groups known to be likely to use less intensive services).

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