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Self-reported Health and Physician Diagnosed Illnesses in Women with Posttraumatic Stress Disorder and Major Depressive Disorder

Patrick S. Calhoun^{1,2,3,4}, Matthew Wiley³, Michelle F. Dennis⁴, and Jean C. Beckham^{1,2,3,4}

¹Veterans Affairs Mid-Atlantic Region Mental Illness Research, Education, and Clinical Center (MIRECC)

²Veterans Affairs Center for Health Services Research in Primary Care

³Durham Veterans Affairs Medical Center

⁴Department of Psychiatry and Behavioral Sciences, Duke University Medical Center

Abstract

PTSD has been associated with poor physical health. Depression is also associated with poor health, and may be responsible for the apparent relationship between PTSD and health outcomes. The current study examined self-reported and physician diagnosed medical morbidity in women. Women with PTSD alone were compared to three other groups of women: women with PTSD and comorbid major depressive disorder (MDD), women with MDD only, or women with neither diagnosis (comparison group). Results suggest that PTSD, with or without MDD, is associated with poor health in women. PTSD severity was related to health complaints beyond the effects of both somatization and depressive symptoms among women with PTSD. Findings and implications are discussed in relation to previous research in the area.

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A large body of literature suggests that trauma and posttraumatic stress disorder (PTSD) are risk factors for poor health related outcomes. PTSD has been related to increases in self-reported health symptoms, objectively measured medical morbidity, and increased health service utilization (for reviews see Beckham, Calhoun, Glenn & Barefoot, 2002; Schnurr & Green, 2004). Although the majority of research examining PTSD and health has been conducted in male veteran samples (Beckham et al., 2002; Kimerling, Clum, McQuery & Schnurr, 2002), there is growing empirical evidence that PTSD is related to poor health in women as well.

PTSD is particularly salient for the health of women. Epidemiologic studies estimate the lifetime prevalence of PTSD in the United States is between 7% and 9%. Prevalence rates of PTSD are twice as high in women than men with estimates ranging from 10% to 13% (Kessler et al., 1995). Further, women are twice as likely to develop PTSD following trauma exposure and are more likely to develop chronic symptoms of PTSD than men (Breslau, 2002; Kessler et al., 1995).

Increasing evidence suggests that PTSD is related to more physical symptoms and decreased physical health status among women. For example, a survey of 1225 female HMO enrollees who screened positive for PTSD found that PTSD was related to self-reports of physical disability, health risk behaviors, and common aversive physical symptoms (Ciechanowski et al., 2004). Similarly, PTSD has been associated with global health perceptions and severity of self-reported health status among civilian women with a history of sexual victimization (Clum et al., 2000; Zoellner et al., 2000) and female veterans with mixed trauma histories (Butterfield et al., 2000; Kimerling et al., 2000).

There is emerging evidence that PTSD may be related to objective measures of poor health in women. (Seng et al. 2006) explored the relationship between PTSD and medical morbidity in a large sample of medicaid recipients. Women with an ICD-9 diagnostic code of PTSD had an increased risk of all categories of disease (Seng et al., 2006). Similarly, in a large cohort of women enrolled in a health maintenance organization, those who screened positive for PTSD had higher numbers of physician coded ICD-9 diagnoses (Ciechanowski et al., 2004). In a review of VA medical records for 134 patients assessed with the CAPS interview, however, (Ouimette et al. 2004) found no difference in the total number of medical conditions between those with PTSD ($M = 4.6$, $SD = 2.57$) and those without the disorder ($M = 4.0$, $SD = 2.23$).

Much of the research that has examined the impact of PTSD on health outcomes in women is limited by not accounting for the effects of depression (e.g., Butterfield et al., 2000; Ciechanowski et al., 2004; Kimerling et al., 2000; Ouimette, Cronkite, Prins et al., 2004). Major depressive disorder (MDD) is often comorbid with PTSD, occurring in as many as 50% of women with PTSD (Kessler et al., 1995). Like PTSD, MDD is more prevalent in women and has been linked to poor health and decreased functional status (Schulberg et al., 1989). Thus, some have suggested that MDD may primarily account for the apparent relationship between PTSD and health status (Clum et al., 2000; Friedman & Schnurr, 1995).

Similarly, somatization has been identified as a sequelae of chronic PTSD (van der Kolk et al., 1996) and has been suggested as one factor leading to increased health complaints among persons exposed to trauma (Pennebaker, 2000). Somatization is often conceptualized as psychological distress experienced as physical symptoms. There is evidence that those with PTSD have high levels of somatization (Beckham et al., 1998). Relatively few studies have examined the relationship between PTSD and health complaints after accounting for the possible influence of somatization.

Several recent studies have examined the association between PTSD and physical health while attempting to statistically control for depression (Clum et al., 2000; Kimerling, 2004; Ouimette et al., 2004a; Seng et al., 2006; Zoellner et al., 2000). Although the majority of these studies are limited by the use of screening instruments or non-standardized assessment strategies to assess PTSD (e.g., Clum et al., 2000; Seng et al., 2006; Zoellner et al., 2000), emerging evidence suggests that PTSD is negatively associated with health even after accounting for depression (Seng et al., 2006).

More research is needed that examines the independent association between PTSD and medical morbidity in women. The present study was designed to extend previous work by evaluating the association between PTSD, self-reported physical health complaints, and physician diagnosed medical morbidity in women with mixed trauma histories. In a methodological advance to previous studies that have examined medical morbidity in women with PTSD and MDD, both current PTSD and current MDD were assessed through clinical structured interviews. Further, statistical analyses appropriate for the use of count

data (e.g., counts of physical problems) were employed in contrast to studies that have examined health related count data using traditional methods (e.g., ordinary least squares regression) that may lead to increased Type 1 error rates (Gardner et al., 1995).

In this study, women with current PTSD only were compared to three other groups of women: women with current PTSD and comorbid current MDD, women with current MDD only, or women with neither diagnosis (comparison group). Consistent with previous research it was hypothesized that women with current PTSD (and with or without MDD) would have poorer health compared to women without current PTSD or MDD. Further, we explored whether women with current PTSD only had worse physical health status compared to women in the other psychiatric groups. An additional hypothesis of the study was that PTSD severity would be related to the number of current health complaints in women with PTSD even after accounting for the effects of somatization and depressive symptoms.

Method

Participants

One hundred ninety-eight women were recruited for a study examining “trauma and health” between 2001 and 2005 through flyers posted at a community and a Veterans Affairs medical center. Participants received \$250 for full participation in the study, (\$50 for screening interview and \$200 at study completion). The parent study was designed to examine the relationship between PTSD and cardiovascular reactivity. Exclusion criteria for the parent study included lifetime, but not current PTSD, psychosis, bipolar disorder, current drug/alcohol abuse/dependence, or seizure disorder and use of medications with significant cardiovascular effects (e.g., high doses of anticholinergic medications). Eleven participants were excluded from based on psychiatric diagnosis (7 for current drug or alcohol abuse/dependence; 2 for psychosis; 2 for current manic symptoms) and two were excluded due to use of contraindicated medication (amitriptyline, methadone). Participants recruited for the comparison group (i.e., neither PTSD nor MDD) were excluded if they met criteria for lifetime PTSD ($n = 27$) or MDD ($n = 5$), resulting in 32 exclusions. Participants provided informed consent before participating. Remaining participants ($N = 148$) were classified into one of four groups based upon clinical interviews: current PTSD only ($n = 32$), current PTSD and current MDD ($n = 40$); current MDD only ($n = 24$), and the comparison group which had neither PTSD nor MDD ($n = 52$). In the comparison group, 44 (85%) participants had no current Axis I disorders, while 8 (15%) met criteria for a mental disorder, most commonly an anxiety disorder other than PTSD ($n = 6$). Results of cardiovascular ambulatory monitoring (Beckham et al., 2008), baroreceptor sensitivity (Hughes et al., 2007) and sleep monitoring (Calhoun et al., 2007) for a subset of the sample has been reported elsewhere.

Measures

Psychology graduate students and college educated diagnostic raters ($n = 8$) received extensive training (including didactic education and supervised experiential learning) on the clinical interviews and all evaluations were supervised by a licensed clinical psychologist. Inter-rater reliability among the raters was excellent (average kappa = .94).

The Clinician Administered PTSD Scale (CAPS, Blake et al., 1995) was used to assess PTSD diagnosis. The CAPS is a clinical structured interview that is considered the gold standard for PTSD assessment. PTSD symptoms were considered present based on the CAPS frequency ≥ 1 /intensity ≥ 2 rule (Blake et al., 1995; Weathers et al., 2001). Trauma screening for the CAPS was conducted using the Traumatic Life Events Questionnaire

(TLEQ; Kubany et al., 2000). CAPS administration was modified for this study such that the interview was discontinued if and when a participant failed to endorse enough symptoms within a symptom cluster to meet a diagnosis of PTSD. Current PTSD was determined using a one-month time frame.

The Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1994) was used to assess Axis I diagnoses other than PTSD. Current diagnoses were determined using a one-month time frame with the exception of substance abuse in which a three-month time frame was used to define current substance abuse/dependence.

Demographic information including age, race, marital status, employment status and socioeconomic status (SES) based on the Hollingshead index (Hollingshead & Redlich, 1958) was collected.

Trauma exposure was measured with the TLEQ (Kubany et al., 2000), a 22-item questionnaire designed to assess exposure and response to traumatic events. Respondents are asked how many times they have experienced each of 22 different traumatic events (DSM-IV criterion A1 for PTSD). Those who endorse a particular event are also asked whether it caused intense fear, helplessness, or horror (DSM-IV criterion A2 for PTSD). Participants are asked to indicate the event that has caused them the most distress. Initial studies have demonstrated content validity and reliability of this measure (Clancy et al., 2006; Kubany et al., 2000).

The health measure used in the National Vietnam Veterans Readjustment Study (Kulka et al., 1990) and elsewhere (Beckham et al., 1998) was used to assess self-reported health complaints and problems. Participants are presented with two dichotomous rating checklists (0 = *no*, 1 = *yes*). The participant first indicates whether they currently have any of a list of 22-item physical symptoms (e.g., headaches, diarrhea). The second checklist contains 37 chronic health problems which are rated for lifetime and past year occurrence. Three scores result: total current health complaints, lifetime physical conditions, and past year physical conditions.

Medical records were reviewed for whether the participant had a regular source of medical care (i.e., primary care provider). Records that included only emergency room visits were not included in these analyses. Following a previously described method (Beckham et al., 1998), charts were rated for the number and type of physician diagnosed disorders. Each disorder was categorized according to the Merck manual (e.g., cardiovascular, gastrointestinal, hematological, genitourinary, pulmonary, musculoskeletal, immunologic, metabolic, dermatological, gynecological, and other). Ratings were completed by a board certified physician who was blind to results of diagnostic interview results. The ratings resulted in two scores: total number of categories and total number of illnesses. This method has demonstrated high reliability (Beckham et al., 1998). In the current study, reliability was calculated with 10% ($n = 15$) of randomly selected charts and rated by two additional raters, resulting in an average Fleiss' kappa coefficient of .82.

The Hypochondriasis Scale from the Minnesota Multiphasic Personality Inventory (MMPI-2; Butcher et al., 1989) was used as a measure of somatization. The scale includes items designed to assess a general over concern with bodily function. The scale does not distinguish between actual and imagined physical difficulties (Greene, 2000).

The Davidson Trauma Scale (DTS; Davidson et al., 1997) is a 17-item self-report inventory designed to assess PTSD symptoms in individuals with a history of trauma and was used as a measure of PTSD severity. The measure offers a rating of both symptom frequency and severity in relation to an identified index trauma and results in a total PTSD severity score.

The scale has demonstrated high internal consistency ($\alpha = .99$), and validity (Davidson et al., 1997).

The Beck Depression Inventory (BDI; Beck & Steer, 1987) is a well established, valid, and reliable ($\alpha = .86$) 21-item self-report measure that assesses current depressive symptomatology (Beck & Steer, 1987).

Data Analysis

Variables measuring current physical complaints, lifetime health problems, past-year health problems and physician diagnosed illnesses and categories were recorded as counts. Count data often violate assumptions of traditional statistical approaches (Gardner et al., 1995). Use of traditional statistical approaches (e.g., ordinary least-squares regression) for count data can lead to distortions of the estimated variance, deflated regression coefficient standard errors, and inflated coefficient test values potentially inflating Type I error rates (Gardner et al., 1995). The Poisson regression model is appropriate for the analysis of count data and was used to analyze the skewed symptom report and health problem count data. In Poisson regression analysis, when exponentiated each regression coefficient is an estimate of the rate ratio, e.g., the ratio of the incidence of chronic health problems of the PTSD group to that of the comparison group (Stokes et al., 1995).

All models were adjusted for age and race. Markers of socioeconomic status (SES) were not used as covariates in between group comparisons as reduced education and SES have been shown to be a sequelae of early trauma and PTSD and are thus confounded with PTSD status (Kulka et al., 1990). A basic tenet of ANCOVA is that the covariate is independent of the primary predictor of interest. When the covariate and predictor are not independent, the regression adjustment may obscure part of the treatment effect or product spurious effects (Miller & Chapman, 2001). Thus, the adjustment for SES would result in biased estimates because some effects attributable to PTSD would be eliminated from the dependent variable (for a discussion see Miller & Chapman, 2001). Models examining lifetime physical problems, physician diagnosed medical conditions and categories included an offset equal to the natural logarithm of person-years. For analyses examining number of physician diagnosed medical conditions, only data from those women with a regular source of medical care were analyzed. Poisson regression was used to examine the unique relationship between health complaints and PTSD severity among those with PTSD. Age, race, SES, depression symptom severity, somatization, and PTSD symptom severity (DTS scores), were entered as independent variables.

Results

Descriptive demographic information for the four groups is displayed in Table 1. Overall, the average age of the sample was 39.9 years ($SD = 12.9$). Average SES of the sample was lower middle class ($M = 41.9$, $SD = 18.1$). A majority of the sample (55%) was from minority ethnic backgrounds and 16% of participants had served in the military. Women in the current PTSD and current MDD groups were less likely to be employed, had less education, and were of lower mean SES than women in the comparison condition.

Trauma exposure was highly prevalent in the sample. Eighty-four percent of women without PTSD reported a trauma history. Types of primary traumas for each group are displayed in Table 2 for descriptive purposes. The majority of women reported that their primary trauma occurred more than one year in the past. Of those women with current PTSD, 93% reported that at least 1 year had elapsed since their trauma.

Health outcomes are displayed in Table 3. Results suggest that current diagnoses of PTSD and MDD are each independently associated with higher numbers of self-reported health outcomes. Women with current PTSD only had significantly more self-reported health complaints, chronic health problems, and health problems in the past year than women in the comparison group. As shown in Table 4, these women reported health complaints at a rate of 153% more than women without current PTSD or MDD. Similarly, they reported a rate of lifetime health problems 83% higher and a rate of past-year health problems 109% higher than women in the comparison condition. Similar results were found for women with current MDD only. As displayed in Table 4, all three groups had more current health complaints and health problems compared to women in the No PTSD/ No MDD comparison group. None of the contrasts between psychiatric groups reached statistical significance.

Examination of medical records indicated that the majority of women ($n=117$, 79%) in the study had a regular source of medical care. There were no differences between groups in having a regular source of care $\chi^2(3, N = 148) = 1.33, ns$. As shown in Table 5, results of medical chart review indicated that women with either current PTSD only or current MDD only tended to have higher rate ratios than women with neither diagnosis with estimates of the rate of total physician diagnosed illnesses for psychiatric groups ranging from 26% to 61% higher than the comparison group. Only those women with both current PTSD and MDD, however, had a statistically significantly higher rate of physician diagnosed medical morbidity (see Table 5).

Poisson regression was used to examine whether PTSD symptom severity was related to current health complaints beyond the effects of somatization and depressive symptoms among those women with current PTSD ($n = 72$). Age, race, SES, PTSD severity (DTS scores), depression, and somatization were entered as independent variables. Results indicated that only PTSD symptom severity was uniquely related to number of current health complaints, (Wald $\chi^2(1, N = 72) = 4.55, p < .05, RR = 1.01, 95\% CI = 1.00 - 1.01$).

Discussion

A possible explanation for the relationship between PTSD and poor health is the high comorbidity between PTSD and depression. Much of the previous work examining PTSD and health in women has been limited by failing to account for MDD. The current literature has also been limited by use of screening measures for psychiatric assessment or inappropriate statistical methods. The current study was designed to address these previous limitations. By recruiting a sample of women with current PTSD and with and without MDD, it was possible to examine whether PTSD alone was related to self-reported and objective measures of health.

Results generally supported the unique relationship between PTSD and poor health. Women with current PTSD and with or without comorbid MDD had more current health complaints, self-reported lifetime health problems and past year medical problems than women without PTSD or MDD. Thus, the current study extends findings and provides clear evidence that the relationship between PTSD and health complaints is not simply accounted for by the high comorbidity between PTSD and MDD.

Consistent with previous work in men (Beckham et al., 1998), PTSD symptom severity was positively associated with health complaints even after accounting for depressive symptom severity and somatization. To our knowledge, this is the first study to account for levels of somatization while examining the association between PTSD and health complaints in women. Like depression, somatization is highly comorbid with PTSD (van der Kolk, 1996) and could account for the increased health complaints observed in those with PTSD. Many

medical providers are reluctant to intervene in response to subjective health complaints or even to accept them as valid outcomes (Engel, 2004). Current results provide suggestive evidence, however, that the health complaints from women with PTSD should not be simply discounted or attributed to somatization.

Empirical reviews have highlighted the relative lack of research on objective health status and PTSD among women (Beckham et al., 2002; Kimerling et al., 2002). The current study examined objective health status through review of medical records. In examining the total number of physician diagnosed medical conditions, models indicated that the PTSD only group ($M = 3.88$) had a 26% higher rate of health problems than the comparison group ($M = 2.68$). While this difference was not statistically significant given the small sample size, the observed effect size is consistent with results from recent studies of large administrative databases documenting higher rates of medical problems in those with PTSD (Ciechanowski et al., 2004; Seng et al., 2006). While large administrative database studies are limited by non-standardized based diagnoses of PTSD, they have the benefit of increased power to detect a relationship between PTSD and objective measures of poor health.

A review of the effect sizes shown in Table 5 suggests a dose response relationship between psychiatric comorbidity and health conditions. Women with both current PTSD and MDD had a statistically significant higher rate (61%) of physician diagnosed medical conditions in comparison to the No PTSD/No MDD group. Further, the comorbid group had a 27% higher rate of medical problems compared to the PTSD only group. These results underscore that psychiatric comorbidity is likely an important predictor of health status among PTSD patients.

The specific pathways in which PTSD may lead to poor health remain poorly understood. (Schnurr and Jankowski 1999) proposed that PTSD is related to poor health through a variety of biological, psychological and behavioral pathways that increase risk of multiple disease outcomes. There is evidence that PTSD is associated with physiological changes that affect immunocompetence and cardiovascular function (Boscarino, 1996; Boscarino, 2008) and is associated with health conditions that affect cardiovascular risk including increased obesity (Dedert, Becker et al., 2008) and metabolic disease (Dedert, Calhoun et al., 2008). PTSD is also strongly associated with increased health risk behaviors including smoking and alcohol use, as well as psychological health risk factors including hostility and anger (Beckham et al., 2002). There is a need for additional research to explore the specific pathways between PTSD and declines in physical health, and to evaluate biomarkers so as to design preventive interventions (Dedert et al., 2008). Understanding the relationship between PTSD and specific disease states may provide mechanistic information to the biological pathways that mediate the relationship between PTSD and poor health.

This study adds to studies examining PTSD and health in women samples. Strengths of the current study include use of structured clinical interviews for diagnosis, the use of both subjective (self-report) and objective measures (chart review) of health status, the inclusion of women with a wide range of trauma exposures, and statistical analyses appropriate for the use of count data. The recruitment strategies in the current study resulted in a sample where almost all (84%) of the non-PTSD sample had a history of trauma exposure. Thus, the current design essentially examines the relationship of PTSD in comparison to a trauma exposed comparison group. Trauma exposed comparison groups are preferred if the purpose of a study is to evaluate the unique contribution of PTSD. While the comparison group did not include any persons with a history of lifetime PTSD or MDD, it included individuals with other psychiatric disorders which may have limited size of obtained effects. Effects may be even greater in comparison to those with no history of psychiatric disorder.

Limitations of the current study include a cross sectional design, small sample size and a convenience sample of volunteers. Demographic differences between groups may also limit results interpretation. Women with psychiatric conditions were less likely to be employed and had lower SES. While this finding is consistent with evidence showing that lower SES is both a risk factor and consequence of exposure to extreme stress, it complicates statistical analysis and interpretation of findings (see Miller & Chapman, 2001 for a discussion). SES may impact health negatively through a number of possible mechanisms including access to medical care and poor nutrition, and could partially account for the observed relationship between psychiatric disorders and health. Regression results examining total health complaints among those with PTSD, however, demonstrated that PTSD symptom severity was uniquely related to health complaints even after accounting for SES. Still, prospective longitudinal studies examining PTSD and health in a wide range of socio-economic strata are needed.

Research is also needed to determine the longitudinal trajectories of PTSD on health, the specificity of this relationship, and the specific pathways that mediate this relationship. It would also be potentially beneficial to explore whether treatment of PTSD leads to an offset in service utilization or medical morbidity. Despite other needed research, the results from this study provide further evidence that PTSD, both with or without co-morbid MDD, is associated with more subjective health complaints and objective health problems.

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Table 1

Demographic Information.

	PTSD+MDD (<i>n</i> = 40)	PTSD Only (<i>n</i> = 32)	MDD Only (<i>n</i> = 24)	No PTSD/No MDD (<i>n</i> = 52)	Test Statistic
Age <i>M</i> (<i>SD</i>)	41.6 (11.4)	40.6 (12.2)	46.8 (15.2)	35.1 (11.8)	$F(1,147) = 5.39^{**}$
Caucasian	45%	41%	42%	48%	$\chi^2 < 1$
Non-Caucasian	55%	59%	58%	52%	
Veteran	25%	22%	17%	6%	$\chi^2(1, N = 148) = 6.26$
Education <i>M</i> (<i>SD</i>)	14.2 (2.7)	14.8 (2.5)	13.3 (2.5)	16.7 (2.8)	$F(1,147) = 11.73^{***}$
Hollingshead <i>M</i> (<i>SD</i>)	49.0 (16.4)	42.2 (19.1)	51.9 (16.2)	31.6 (14.4)	$F(1,147) = 12.47^{***}$
Currently Employed	53%	72%	54%	94%	$\chi^2(1, N = 148) = 17.92^{***}$
Currently Married	45%	50%	38%	33%	$\chi^2(1, N = 148) = 2.91$

Note. PTSD = posttraumatic stress disorder; MDD = major depressive disorder.

*
 $p < .05$.

**
 $p < .01$

 $p < .001$.

Table 2

Traumas Experienced and Mean Months Since Trauma by Diagnostic Group

Trauma	PTSD/MDD (n = 40)	PTSD Only (n = 32)	MDD Only (n = 24)	No PTSD/NO MDD (n = 52)
Childhood physical/ sexual abuse	27%	19%	21%	9%
Months since trauma	242	351	421	251
Adult physical/ sexual abuse	18%	13%	0%	4%
Months since trauma	182	165	0	72
Accident	5%	0%	4%	2%
Months since trauma	18	0	48	96
Domestic violence	15%	22%	4%	6%
Months since trauma	93	155	36	125
Death of someone	20%	22%	38%	29%
Months since trauma	112	45	143	81
Witness/experience violence as adult	0%	12%	4%	2%
Months since trauma	0	61	28	260
Natural disaster	0%	0%	4%	4%
Months since trauma	0	0	30	92
Witness/experience Violence as child	5%	3%	4%	8%
Months since trauma	165	26	396	354
Other	10%	9%	13%	17%
Months since trauma	100	73	71	54
No Traumas experienced	0%	0%	8%	19%

*
 $p < .05$.**
 $p < .01$.***
 $p < .001$.

Table 3

Health Measure Ratings for Women with and without current PTSD and MDD

	<u>PTSD+MDD</u>		<u>PTSD Only</u>		<u>MDD Only</u>		<u>No PTSD/No MDD</u>	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Self Reported Outcomes (<i>N</i> = 148)								
Current health complaints	8.23	(4.28)	6.38	(4.42)	8.38	(5.49)	2.44	(2.85)
Lifetime physical conditions	5.38	(3.62)	4.44	(3.17)	5.67	(3.42)	2.17	(2.00)
Past year physical conditions	3.15	(2.34)	2.16	(1.97)	3.38	(2.50)	1.00	(1.36)
Objective Outcomes (<i>N</i> = 117)								
Physician diagnosed medical categories	3.42	(2.01)	3.08	(1.75)	3.43	(2.48)	2.05	(1.64)
Total physician diagnosed illnesses across categories	4.82	(3.40)	3.88	(2.26)	4.52	(3.63)	2.68	(2.41)

Table 4

Rate Ratios for Contrasts among Diagnostic Groups on Self-Reported Health Outcomes

Health Outcome	Group Contrast	Rate Ratio	(95% CI)	χ^2 (1, N=148)
Current health complaints	PTSD+MDD vs. No PTSD/No MDD	3.23	(2.25 – 4.64)	40.36***
	PTSD Only vs. No PTSD/No MDD	2.53	(1.71 – 3.73)	21.74***
	MDD Only vs. No PTSD/No MDD	3.18	(2.12 – 4.77)	31.48***
	PTSD+MDD vs. PTSD Only	1.27	(0.94 – 1.73)	2.49
	PTSD+MDD vs. MDD Only	1.02	(0.74 – 1.39)	< 1
	PTSD Only vs. MDD Only	0.79	(0.88 – 1.12)	1.70
Lifetime health problems	PTSD+MDD vs. No PTSD/No MDD	2.16	(1.55 – 3.00)	20.99***
	PTSD Only vs. No PTSD/No MDD	1.83	(1.28 – 2.61)	11.12***
	MDD Only vs. No PTSD/No MDD	2.12	(1.46 – 3.09)	15.55***
	PTSD+MDD vs. PTSD Only	1.18	(0.87 – 1.59)	1.14
	PTSD+MDD vs. MDD Only	1.02	(0.74 – 1.39)	0.01
	PTSD Only vs. MDD Only	0.86	(0.61 – 1.21)	0.72
Past year health problems	PTSD+MDD vs. No PTSD/No MDD	2.72	(1.91 – 4.71)	22.93***
	PTSD Only vs. No PTSD/No MDD	2.09	(1.27 – 3.45)	8.42**
	MDD Only vs. No PTSD/No MDD	3.11	(1.88 – 5.13)	19.69***
	PTSD+MDD vs. PTSD Only	1.43	(0.96 – 2.15)	3.09
	PTSD+MDD vs. MDD Only	0.97	(0.65 – 1.43)	0.03
	PTSD Only vs. MDD Only	0.67	(0.43 – 1.05)	3.01

Note. Results shown adjusted for age and race. The second term in each group contrast served as the reference group.

*
 $p < .05$.

**
 $p < .01$

 $p < .001$.

Table 5

Effect Sizes for Pairwise Contrasts among Diagnostic Groups on Objective Health Outcomes

Health Outcome	Group Contrast	Rate Ratio	(95% CI)	χ^2 (1, N=117)
Physician diagnosed medical categories	PTSD+MDD vs. No PTSD/No MDD	1.56	(1.09 – 2.23)	5.94**
	PTSD Only vs. No PTSD/No MDD	1.38	(0.93 – 2.04)	2.63
	MDD Only vs. No PTSD/No MDD	1.53	(1.02 – 2.30)	4.26*
	PTSD+MDD vs. PTSD Only	1.13	(0.79 – 1.61)	0.45
	PTSD+MDD vs. MDD Only	1.02	(0.71 – 1.47)	0.01
	PTSD Only vs. MDD Only	0.90	(0.61 – 1.34)	0.26
Total physician diagnosed illnesses across categories	PTSD+MDD vs. No PTSD/No MDD	1.61	(1.10 – 2.34)	6.08**
	PTSD Only vs. No PTSD/No MDD	1.26	(0.83 – 1.93)	1.19
	MDD Only vs. No PTSD/No MDD	1.43	(0.93 – 2.20)	2.58
	PTSD+MDD vs. PTSD Only	1.27	(0.87 – 1.85)	1.55
	PTSD+MDD vs. MDD Only	1.13	(0.77 – 1.65)	0.37
	PTSD Only vs. MDD Only	0.89	(0.58 – 1.34)	0.31

Note. Results shown adjusted for age and race. The second term in each group contrast served as the reference group.

* $p < .05$.

** $p < .01$.

*** $p < .001$.