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Association of trauma exposure with psychiatric morbidity in military veterans who have served since September 11, 2001

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Abstract

Objective—This study examined the association of lifetime traumatic stress with psychiatric diagnostic status and symptom severity in veterans serving in the US military after 9/11/01.

Method—Data from 356 US military veterans were analyzed. Measures included a standardized clinical interview measure of psychiatric disorders, and paper-and-pencil assessments of trauma history, demo-graphic variables, intellectual functioning, posttraumatic stress disorder (PTSD) symptoms, depression, alcohol misuse, and global distress.

Results—Ninety-four percent of respondents reported at least one traumatic stressor meeting DSM-IV criterion A for PTSD (i.e., life threatening event to which the person responded with fear, helplessness or horror), with a mean of four criterion A traumas. Seventy-one percent reported serving in a war-zone, with 50% reporting occurrence of an event meeting criterion A. The rate of current psychiatric disorder in this sample was: 30% PTSD, 20% major depressive disorder, 6% substance abuse or dependence and 10% for the presence of other Axis I psychiatric disorders. After accounting for demographic covariates and combat exposure, childhood physical assault and accident/disasters

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Conflict of interest

My coauthors, Drs. Calhoun, Yoash-Gantz, Taber, Miller, Tupler, Morey, Marx, Weiner and Beckham, as well as Ms. Kimberly Green and I do not have any interests that might be interpreted as influencing the research. APA ethical standards were followed in the conduct of this research.

Contributors

Dr. Dedert wrote the first version of the manuscript and conducted many of the data analyses. Ms. Green conceptualized and created the poster on which this manuscript was based and participated in data management and writing of the manuscript. Dr. Calhoun participated in the study design, conceptualization and writing of the manuscript as well as assisting in data analyses. He also participated in the study design and data collection. Dr. Yoash-Gantz participated in data collection and edits of the manuscript. Dr. Taber participated in data collection and edits of the manuscript. Dr. Miller participated in data collection and edits of the manuscript. Dr. Tupler participated in the study design, data collection, and edits of the manuscript. Dr. Morey participated in the study design and data collection. Dr. Marx participated in the study design and data collection. Dr. Weiner participated in study design and data collection. Dr. Beckham contributed to each aspect of this project from study design to writing of the manuscript.

were most consistently associated with increased likelihood of PTSD. However, PTSD with no comorbid major depressive disorder or substance use disorder was predicted only by combat exposure and adult physical assault. Medical/unexpected-death trauma and adult physical assault were most consistently associated with more severe symptomatology.

Conclusions—Particular categories of trauma were differentially associated with the risk of psychiatric diagnosis and current symptom severity. These findings underscore the importance of conducting thorough assessment of multiple trauma exposures when evaluating recently post-deployed veterans.

Keywords

Traumatic stress; Posttraumatic stress disorder; Combat

Epidemiological data suggest that the majority of adults (between 69% and 90%) have experienced at least one potentially traumatic event. Exposure to traumatic events is a risk factor for psychiatric disturbance, including the development of posttraumatic stress disorder (PTSD). Estimated rates of PTSD are particularly high among veterans exposed to war. It is estimated that 15% of Vietnam veterans meet diagnostic criteria for PTSD and as many as 31% have a lifetime history of the disorder (Kulka et al., 1990). Recent data examining adjustment among veterans returning from Afghanistan or Iraq suggest 11–20% of these veterans meet criteria for current PTSD (Hoge et al., 2004).

While the relationship between combat exposure and risk of PTSD is well documented (Kulka et al., 1990), the contribution of other lifetime traumatic stress to PTSD and overall severity of psychiatric symptoms among veterans remains limited. In meta-analyses, prior trauma (Ozer et al., 2003) and childhood adversity and childhood abuse (Brewin et al., 2000) have been shown to have uniform predictive effects for the development of PTSD. Other studies suggesting an influence of pre-military potentially traumatic events on psychiatric morbidity (King et al., 1996; Bremner et al., 1993) underscore the importance of evaluating lifetime trauma exposure in individuals with combat-related psychiatric disorders. However, as Clancy and colleagues (2006) have noted, the current literature examining the relative contribution of pre-military traumatic stress to psychiatric morbidity among veterans has significant limitations. Most studies have focused on one or two types of pre-military trauma and the relative contribution of a wide range of traumatic events to the presentation of military PTSD has been unevaluated. Many studies have used non-standardized trauma assessment (Clancy et al., 2006; Green et al., 2000), and most have not evaluated whether event exposure met DSM-IV criterion A for PTSD (i.e., the person experienced or was confronted with an event that involved death, serious injury or threat to the physical integrity of self and others to which he/she responded with intense fear, helplessness, or horror). A recent study in Vietnam veterans with PTSD that included standardized assessment of a wide range of traumatic experiences and evaluated whether exposure met DSM-IV criterion A found that childhood physical abuse and adult physical abuse were related to more severe PTSD, more severe depression, and problematic alcohol use (Clancy et al., 2006).

To date, we are unaware of any studies evaluating the influence lifetime trauma exposure on psychiatric morbidity in military veterans who have served since September 11, 2001. The aims of this study are to: (1) investigate lifetime traumatic stress in a sample of recent veterans and investigate the relative impact of combat exposure and other traumatic events on psychiatric outcomes while controlling for potentially confounding demographic variables (Kessler et al., 2005) and intellectual functioning (Kremen et al., 2007); (2) evaluate the relationship of the number of traumatic event exposures with psychiatric outcomes, and (3) evaluate the relationship between lifetime trauma and psychiatric symptom severity. Specifically, the study was designed to examine the relationship between traumatic stress and

current psychiatric status as well as symptom severity including current PTSD, current major depressive disorder (MDD), lifetime substance use disorder (SUD), or any other current Axis I psychiatric disorder (other than PTSD or MDD). To examine the influence of comorbidity, we separately analyzed individuals with PTSD with and without comorbid disorders.

1.Method

1.1.Participants and procedures

After completing informed consent, three hundred fifty six participants completed the Traumatic Life Events Questionnaire (TLEQ developed by Kubany et al., 2000) as part of a multi-site research study conducted through the Department of Veterans Affairs Mid-Atlantic 6 Mental Illness Research, Education and Clinical Center (MIRECC). Veterans who had served since 9/11/01 in the US military and were enrolled in the VA were sent letters inviting them to participate in a study on post-deployment mood, and mental and physical health. Participants were also referred to the study through fliers and clinical providers.

1.2.Measures

Unless otherwise noted, the measures used have demonstrated sufficient evidence of reliability and validity.

1.3.Diagnostic information

Psychiatric diagnoses were evaluated using the Structured Clinical Interview for DSM-IV Disorders (SCID; First et al., 1997). SCID interviewers received training from experienced interviewers and provided diagnoses of videotaped SCID interviews. The raters had a mean kappa for interrater reliability of .96.

1.4.Demographic questionnaire

Items developed for this study obtained demographic information on age, gender, ethnic, marital, and employment status; military-service characteristics and help-seeking status.

1.5.Shipley Institute of Living Scale (SILS)

The SILS is a brief measure of general intellectual functioning (Shipley, 1940) consisting of a 40-item vocabulary subtest and a 20-item abstraction subtest. The SILS was administered without time limits, a method that has been found to have similar convergent validity to the timed administration method (Heinemann, 1985).

1.6.Combat Exposure Scale (CES)

The CES is a widely used 7-item, Likert-type scale designed to measure level of wartime trauma exposure (Keane et al., 1989).

1.7.Trauma Life Events Questionnaire (TLEQ)

The TLEQ (Kubany et al., 2000) is a 22-item questionnaire designed to assess exposure and response to traumatic events. Respondents are asked how many times they have experienced each of 21 different traumatic events (DSM-IV criterion A1 for PTSD), as well as an additional item providing an opportunity to report any other potentially traumatic events. Those endorsing a particular event are also asked whether the event met DSM-IV criterion A2 for PTSD, as well as several other follow-up questions such as when the event first occurred. Consistent with prior studies with veterans, the TLEQ was modified to assess the relationship between trauma exposure and military service (Clancy et al., 2006). For each event, respondents indicated whether the event occurred prior to, during or after military service: " Did it happen

– before the military, – while on active duty, – as a veteran” (note the participant could mark blank beside any or all time periods during which the event occurred except for childhood abuse categories). Initial studies have demonstrated content validity and reliability of this measure (Kubany et al., 2000). The average convergent validity with an interview one week later for the TLEQ was 85% (range of 74–97% for individual items). Consistent with previous work (Clancy et al., 2006), individual items/exposures were summarized into categories of trauma type, e.g., childhood physical abuse, accident/disaster (see Table 1).

1.8. Davidson Trauma Scale (DTS)

The DTS (Davidson et al., 1997) prompts participants to report an autobiographical narrative of a trauma and subsequently rate both symptom frequency and severity for all 17 DSM-IV PTSD symptoms experienced within the past week (Davidson et al., 1997).

1.9. Beck Depression Inventory (BDI-II)

The BDI-II is a 21-item, forced-choice scale of general depression severity (Beck et al., 1996).

1.10. Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT (Saunders et al., 1993) is a 10-item questionnaire used to screen for problematic alcohol use.

2. Analyses

The prevalence of potentially traumatic events was calculated by using a sum of the 21 events from the TLEQ (excluding item 22 “other”), with a potential range of 0–21 potentially traumatic events. These items were further examined to determine how many met DSM-IV criterion A. Logistic regression analyses examined the relationship between trauma exposure that met DSM-IV criterion A and psychiatric outcomes. Psychiatric groups included current PTSD, MDD, lifetime substance use disorder (SUD) or any other Axis I psychiatric disorder (not PTSD, MDD, or SUD). Given the low frequency of current substance use disorders (6%), analyses examined lifetime SUD. To examine the influence of comorbidity on the observed results, psychiatric outcomes also included a group with PTSD and no comorbid MDD or lifetime substance abuse dependence as well as a group comprised of only of participants with both PTSD and MDD, resulting in a total of six psychiatric groups. In each model, age, gender, minority status, and intellectual functioning were entered as covariates with each of the first six trauma categories listed in Table 1 entered as predictors. Combat exposure, as measured by the CES, was added to the model in place of the TLEQ item on war-zone exposure because: (1) the CES is a well-established continuous measure of combat exposure, and (2) the influence of combat exposure on psychiatric morbidity is well-established, so a continuous measure was expected to account for more variance and allow for testing the influences of other types of trauma.

The influence of the number of traumatic events on psychiatric status was evaluated using similar logistic regression analyses with age, gender, minority status, and intellectual functioning as covariates and the sum of the 21 potentially traumatic event exposures participants endorsed on the TLEQ as a predictor for models of each of the six psychiatric group outcomes. These analyses were repeated with the sum of potentially traumatic event exposures replaced by the sum of traumatic events in which the participant met criterion A.

Among those veterans meeting criteria for any Axis I disorder, we examined the impact of each trauma category on severity of symptoms of PTSD, MDD, and alcohol misuse through

simultaneous linear regression. All statistical analyses were performed using SAS PC, Version 8 (SAS Inc., Cary, NC).

3. Results

3.1. Demographic and diagnostic information

Demographic data and psychiatric morbidity rates are presented in Table 2. Seventy-eight percent of the sample was male, with a sample mean age of 37. The majority was African American or Caucasian, employed, and currently married. Sixty-eight percent served in the Iraq or Afghanistan theaters. Psychiatric morbidity rates are presented in Table 3. Rates were 30% for current PTSD, 20% for current MDD, 6% for current SUD, 38% for lifetime SUD, and 10% for presence of any other current Axis I psychiatric disorder. Of the 107 (30%) with current PTSD, 44% were diagnosed with comorbid current MDD, and 53% with a lifetime SUD. Of the 70 (20%) participants with current MDD, 67% were diagnosed with comorbid PTSD, and 54% with lifetime SUD. Of the 135 (38%) with a lifetime SUD, 57 (42%) were diagnosed with PTSD, and 38 (28%) were diagnosed with MDD.

3.2. Prevalence of traumatic events

Most participants endorsed multiple potentially traumatic events. Seventy-three (21%) participants reported only one traumatic event meeting criterion A, while 59 (17%) reported two traumatic events meeting criterion A, and 204 (57%) reported three or more traumatic events meeting criterion A. Of the 21 potentially traumatic events queried by the TLEQ, the mean number of these events endorsed was 6.3 ($SD = 3.4$) and ranged from 0 to 17. The mean number of traumatic events meeting criterion A was 3.6 ($SD = 2.8$). Finally, combat exposure, as measured by CES scores, ranged from 0 to 39 ($M = 11.5$, $SD = 10.5$).

The prevalence rates for each of the TLEQ trauma categories are presented in Table 4. Results shown include both exposure to events and whether the event endorsed met DSM-IV criterion A. Overall, almost the entire sample (99%) reported exposure to at least one potentially traumatic event. Eighty-eight percent of the respondents endorsed pre-military exposure to potentially traumatic events, 93% reported potentially traumatic event exposure during military service including 71% who reported war-zone exposure, and 53% reported post-military potentially traumatic events.

Many individuals reported experiencing events that were life threatening but did not meet the A criterion. For example, intense fear, helplessness, or horror was endorsed by only 53% of veterans reporting an accident or disaster, 65% of veterans endorsing adult physical assault, and 69% of those reporting medical illness/unexpected death. Similarly, although 71% of the sample reported serving in a war-zone, only 50% of the sample reported combat experiences that met criterion A for possible diagnosis of PTSD.

The most frequently reported traumas during military service meeting criterion A were war-zone trauma (49%) and medical illness/unexpected death (44%). The most frequent pre-military trauma exposures satisfying criterion A were childhood physical abuse (37%) and medical illness/unexpected death (32%). The relative frequency of trauma exposure following military service was low, but the most commonly endorsed trauma exposure was medical/unexpected death (21%). The prevalence of reported sexual trauma during and after the military was low (3% and 1%, respectively).

3.3. Logistic regression analyses of psychiatric morbidity by criterion A trauma types – study aim 1

Results of logistic regression analyses are presented in Table 5. In the model with current PTSD diagnosis as the outcome, intellectual functioning *z*-scores were associated with decreased odds of PTSD ($OR = 0.62, p < .05$). More severe combat exposure ($OR = 1.10, p < .01$), accident/disaster trauma ($OR = 2.20, p < .01$), and childhood physical assault ($OR = 2.18, p < .05$) were associated with increased odds of PTSD. Similarly, analyses examining current MDD as the outcome indicated that higher CES scores ($OR = 1.05, p < .01$), accident/disaster trauma ($OR = 2.92, p < .01$), and childhood physical assault ($OR = 2.19, p < .05$) were associated with increased risk of depression. In addition, adult sexual assault ($OR = 3.69, p < .05$) was related to increased odds of MDD. Lifetime SUD was associated with male gender ($OR = 3.78, p < .01$) and adult physical assault ($OR = 1.72, p < .05$). In a model predicting the presence of any current psychiatric disorder other than PTSD, MDD, or SUD, minority status ($OR = 2.63, p < .05$) and medical/unexpected death ($OR = 2.85, p < .05$) were related to increased risk of a psychiatric disorder. When examining the PTSD only participants (no current MDD or lifetime SUD), increased odds of PTSD was associated only with combat exposure ($OR = 1.05, p < .01$) and adult physical assault ($OR = 2.10, p < .05$). Regarding the group comprised entirely of participants with both current PTSD and current MDD, increased odds of psychiatric morbidity were associated with combat exposure ($OR = 1.10, p < .01$), accident/disaster ($OR = 3.58, p < .01$), and childhood physical assault ($OR = 2.56, p < .05$).

3.4. Logistic regression analyses of psychiatric morbidity by number of potentially traumatic event exposures – study aim 2

Using age, gender, minority status, and intellectual functioning as covariates, the number of traumatic event exposures was predictive of increased risk of PTSD ($OR = 1.14, p < .01$), MDD ($OR = 1.18, p < .01$), SUD ($OR = 1.16, p < .01$), and the group comprised entirely of comorbid PTSD and MDD ($OR = 1.16, p < .01$). However, the number of potentially traumatic events was not associated with an increased risk of other psychiatric disorders or the PTSD group without comorbid MDD or SUD.

Repeating these analyses using the number of criterion A traumatic events as the predictor produced the same overall pattern of results. The number of trauma exposures was associated with increased risk of PTSD ($OR = 1.14, p < .01$), MDD ($OR = 1.28, p < .01$), SUD ($OR = 1.19, p < .01$), and the group comprised entirely of participants with both PTSD and MDD ($OR = 1.20, p < .01$). The number of criterion A traumatic event exposures was not associated with increased risk of other psychiatric disorders, or PTSD without comorbid MDD or SUD.

3.5. Simultaneous regression analyses of psychiatric symptoms among those diagnosed with a psychiatric disorder – study aim 3

Follow-up analyses sought to characterize the influences of covariates and trauma on PTSD symptoms (DTS), depressive symptoms (BDI-II), and alcohol misuse (AUDIT) among those diagnosed with a psychiatric disorder ($n = 185$). Statistics for predictors that were significantly associated with each of the three outcomes are listed in Table 6. In the regression equation with DTS as the outcome, combat exposure (partial $R^2 = .11, p < .01$), medical/unexpected death trauma (partial $R^2 = .08, p < .01$), and adult physical-assault trauma (partial $R^2 = .03, p < .05$) were related to the outcome. In the regression equation predicting BDI-II scores, combat exposure (partial $R^2 = .03, p < .05$) and medical/unexpected-death trauma (partial $R^2 = .10, p < .01$) were significantly predictive. Only demographic variables, younger age (partial $R^2 = .10, p < .01$) and male gender (partial $R^2 = .03, p < .05$), were associated with elevated AUDIT scores.

4. Discussion

In this sample, higher combat exposure, childhood physical assault and accident/disasters each significantly increased the risk of current PTSD. The same traumatic events were predictive of a psychiatric group containing only those with both PTSD and MDD. When examining only PTSD participants without current MDD or lifetime SUD, only combat exposure and adult physical-assault trauma were significantly predictive of PTSD. These results suggest that while physical assaults in adulthood might increase risk of the development of PTSD, other traumatic events such as physical assaults occurring in childhood and accidents/disasters, might increase risk of comorbid disorders with PTSD. Comorbidity among those with PTSD and MDD was high (approximately half). Lifetime SUD was also present in about half of those with PTSD or MDD. In those with lifetime SUD, almost half (42%) had current PTSD. This suggests that veterans being evaluated are likely to present with comorbid PTSD, MDD and/of SUD.

Results also suggested that the number of different traumatic stress exposures endorsed across the lifespan is not only related to PTSD but to MDD and overall psychiatric-disorder status. This finding is consistent with other reports that returning veterans have substantially high rates not only of PTSD but also of MDD and alcohol abuse or dependence (National Vietnam Veterans Readjustment Study (Kulka et al., 1990)). In addition, it suggests that although war-zone traumatic stress exposure was consistently significant for current psychiatric status, other trauma exposure also significantly affected current diagnostic status in veterans who served following 9/11/2001.

The relationship between higher intellectual functioning and reduced odds of current PTSD observed in this study is consistent with previous research noting decreased risk of PTSD in Vietnamera veterans with higher pre-military cognitive ability (Kremen et al., 2007). The low rates of post-military trauma in this sample were also noteworthy, as rates were significantly below that observed in research on Vietnam-era veterans (Clancy et al., 2006). This may have been due to the brief interval between return from deployment and study participation. Because post-military trauma was strongly associated with psychiatric symptoms in Vietnam-era veterans (Clancy et al. 2006), prevention of post-military trauma through facilitating transition to civilian life may significantly improve the post-deployment mental health of this cohort. An obvious treatment goal in this cohort will be to prevent further trauma exposure.

Adult sexual trauma was associated with a more than a threefold increase in risk of MDD in our sample. Early life traumas can significantly increase the risk for MDD in adulthood and increase the risk of a depressogenic reaction to stressful life events (Kendler et al., 2004), but this is the first report of which we are aware that adult sexual trauma is associated with an increased risk of current MDD.

The high rate of traumatic event exposure (mean = 6) is consistent with other community and PTSD samples where a where a range of 4.8–8.3 events (without regard to criterion A status) have been reported (Breslau et al., 1998; Kubany et al., 2003). Pre-military and military traumatic stress exposure rates observed in this sample are also similar to those reported in a help-seeking, Vietnam veteran samples (Clancy et al., 2006; Smith et al., 1999). These results may not generalize to individuals with a single trauma exposure.

In this sample, many of those individuals who reported service in a war-zone, but who did not endorse fear, helplessness or horror (28% ($n = 70$) of the 71% ($n = 251$) of the total sample who reported war-zone exposure) met criteria for psychiatric disorders (19% with current PTSD, 13% with current MDD, and 23% with lifetime SUD). This suggests that endorsement of fear, helplessness and horror did not differentiate between those who did and not develop psychiatric disorders following service in a war-zone. This finding is consistent with recent

results reported by Adler and colleagues that a significant number soldiers returning from a year in Iraq who did not endorse criterion A met criteria for PTSD (Adler et al., 2008).

Pre-military traumatic stress exposure occurred in the majority of the sample (67%). Over half reported significant military traumatic stress exposure (70%), which was primarily combat-related, but also included other events such as accidents and sexual assault. The lowest rate of trauma exposure occurred following the military (29%), which may have been affected by the relatively short time duration since the end of active military service in this sample (median of 10 months; range: 0–69 months). Finally, due to the cross-sectional nature of the study, we are unable to determine the causality of associations of lifetime trauma with psychiatric morbidity. While trauma might increase the risk of psychiatric morbidity, it is also possible that veterans with higher psychiatric morbidity may be more likely to be exposed to traumatic events as a result of social or occupational impairment that is characteristic of psychiatric morbidity.

Limitations are present in this study. Participants were self-selected volunteers who responded to paid research recruitment, and most were enrolled as VA patients, so they may have had higher trauma exposure and psychopathology and may not be representative of the entire cohort of veterans serving since 9/11/01. The TLEQ is a retrospective account of trauma exposure. The SCID is not a prospective documentation of the development of psychiatric disorders.

Results from this study underscore the importance of evaluating lifetime trauma exposure in returning veterans in order to provide a comprehensive assessment of their psychiatric status and current symptom severity. Future studies could explore the possible effect of different types of lifetime trauma-exposure assessment on treatment course and treatment response for both men and women, as the ultimate goal of research in this area is to improve the functionality and adjustment in veterans exposed to multiple traumatic events.

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Table 1

Trauma categories created from the Traumatic Life Events Questionnaire (TLEQ).

Trauma category	TLEQ item number and description
Childhood physical assault	12. Severely physically punished
	13. Witness to family violence
Childhood sexual assault	15. Before age 13, touched/fondled by someone > 5 yrs older, against your will
	16. Before age 13, touched/fondled by someone close to your age, against your will
	17. After age 13 and before age 18, touched/fondled against your will
Medical/unexpected death	5. Sudden and unexpected death of close friend/loved one
	6. Survival of life threatening or disabling accident/assault/illness of loved one
	7. Personal life-threatening illness
	20. Miscarriage by self or partner
	21. Abortion by self or partner
Accident/disaster	1. Natural disaster
	2. Serious motor-vehicle accident
	3. Any other kind of serious accident
Adult physical assault	8. Robbery or witness to a robber
	9. Beaten and/or badly hurt by a stranger
	10. Witness to a beating or killing
	11. Threat made to self
	14. Physically abused by a spouse/partner
	19. Stalked
Adult sexual assault	18. Touched/fondled against one's will
War-zone exposure	4. Exposed to warfare or combat ^a

^aVariable not used.

Table 2

Demographic information.

Variable	Mean (standard deviation)
Age	37.0 (10.0)
Education	13.7 (3.0)
Intellectual functioning (Shipley)	98.1 (11.3)
	N (%)
Race	
African American	174 (49%)
Caucasian	163 (46%)
Native American	7 (2%)
Asian	3 (1%)
Other	6 (2%)
Gender	
Male	277 (78%)
Female	79 (22%)
Marital status	
Married	187 (53%)
Never married	91 (26%)
Separated/divorced	73 (21%)
Widowed	2 (1%)
Employment status	
Working full-time	210 (60%)
Working part-time	49 (14%)
Unemployed	93 (26%)
Military duty status	
Discharged	159 (45%)
National guard	98 (28%)
Reserves	88 (25%)
Active	9 (3%)
Missing	2 (1%)
Combat exposure scale (CES) Categories	
Light	173 (49%)
Light-moderate	64 (18%)
Moderate	63 (18%)
Moderate-heavy	47 (13%)
Heavy	9 (3%)

Table 3

Psychiatric morbidity and comorbidity with posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) for entire sample ($N = 356$).

Psychiatric disorder	Disorder frequency <i>N</i> (%)	Comorbid with current PTSD <i>N</i> (%)	Comorbid with current MDD <i>N</i> (%)
Lifetime PTSD	129 (36)	107 (83)	49 (38)
Current PTSD	107 (30)	-	47 (44)
Lifetime MDD	146 (41)	74 (51)	70 (48)
Current MDD	70 (20)	47 (67)	-
Lifetime substance abuse/dependence	135 (38)	57 (42)	38 (28)
Current substance abuse/dependence	20 (6)	9 (45)	8 (40)
Current bipolar disorder	8 (2)	6 (75)	-
Current psychotic disorder	1 (<1)	1 (100)	0 (0)
Current anxiety disorder (including PTSD)	142 (40)	-	52 (37)
Current somatoform disorders	6 (2)	4 (67)	4 (67)
Current eating disorders	7 (2)	7 (100)	5 (71)

SCID interviews categorize a disorder as “current” if criteria for the disorder have been met in the month preceding the interview. In contrast, “Lifetime” diagnoses include both current diagnoses and for which the participant met criteria for the disorder in the past.

Table 4
Potentially traumatic event and intense fear, helplessness, or horror (criterion A) frequencies.

Trauma type	Endorsed event N (%)	Endorsed criterion A N (%)	Criterion A met before military N (%)	Criterion A met during military N (%)	Criterion A met after military N (%)
Childhood physical abuse	161 (45)	131 (37)	131 (37)	-	-
Childhood sexual abuse	66 (19)	46 (13)	46 (13)	-	-
Medical/unexpected death	317 (89)	219 (62)	113 (32)	156 (44)	76 (21)
Accident/disaster	282 (79)	150 (42)	87 (24)	83 (23)	34 (10)
Adult sexual assault	29 (8)	19 (5)	8 (2)	10 (3)	3 (1)
Adult physical assault	231 (65)	150 (42)	95 (27)	77 (22)	35 (10)
War-zone exposure	251 (71)	177 (50)	2 (1)	176 (49)	4 (1)
At least one trauma	352 (99)	336 (94)	238 (67)	249 (70)	105 (29)

Participants endorsed recurrence of the same criterion A trauma category in multiple time periods, so the sum of participants endorsing a trauma before, during, and after the military is not equal to the number of participants endorsing lifetime criterion A trauma for a given category.

Table 5
Summary of logistic regression analyses of psychiatric morbidity: study aim 1.

Predictors	Current posttraumatic stress disorder (PTSD) odds ratio (95% CI)	Current major depressive disorder (MDD) odds ratio (95% CI)	Lifetime substance abuse/dependence (SUD) odds ratio (95% CI)	Other psychiatric disorder odds ratio (95% CI)	Current PTSD without MDD odds ratio (95% CI)	Current PTSD and MDD odds ratio (95% CI)
Age	.99 (.97-1.02)	.99 (.96-1.02)	.99 (.97-1.01)	.99 (.95-1.03)	.99 (.96-1.02)	1.01 (.97-1.04)
Race	.81 (.44-1.49)	.72 (.37-1.40)	1.05 (.63-1.76)	2.63* (1.08-6.41)	.91 (.45-1.83)	.88 (.39-1.95)
Gender	1.93 (.90-4.15)	1.40 (.61-3.22)	.26** (.13-.55)	0.71 (.25-2.00)	1.24 (.52-2.93)	1.83 (.65-5.14)
Intellectual functioning (Shipley)	.62 (.43-.89)	.77 (.52-1.14)	.97 (.71-1.33)	1.46 (.85-2.54)	.72 (.48-1.07)	.80 (.50-1.28)
Combat exposure	1.10** (1.07-1.14)	1.05** (1.01-1.08)	1.01 (.99-1.04)	1.00 (.96-1.04)	1.05** (1.01-1.08)	1.10** (1.06-1.14)
Childhood physical assault	2.18* (1.20-3.95)	2.19* (1.17-4.10)	1.24 (.75-2.05)	1.12 (.50-2.52)	1.21 (.62-2.37)	2.56* (1.19-5.51)
Childhood sexual assault	.47 (.20-1.15)	.92 (.37-2.24)	1.29 (.59-2.83)	1.27 (.37-4.40)	.52 (.18-1.51)	.78 (.27-2.29)
Medical/unexpected death	1.01 (.54-1.89)	1.63 (.79-3.38)	1.22 (.72-2.05)	2.85* (1.12-7.29)	.90 (.44-1.83)	1.33 (.54-3.28)
Accident/disaster	2.20** (1.24-3.90)	2.92** (1.56-5.48)	1.44 (.88-2.35)	1.51 (.70-3.28)	.80 (.41-1.57)	3.58** (1.63-7.86)
Adult physical assault	1.16 (.64-2.10)	.80 (.42-1.51)	1.72* (1.03-2.88)	.53 (.23-1.22)	2.10* (1.05-4.18)	.62 (.29-1.35)
Adult sexual assault	1.87 (.53-6.63)	3.69* (1.10-12.44)	1.17 (.35-3.88)	-	1.44 (.32-6.41)	2.14 (.50-9.23)

Race is coded as a dichotomous variable including either Caucasian or other race. Odds ratios represent the odds associated with a race other than Caucasian. Gender is modeled so that odds ratios represent the odds of a diagnosis associated with female gender. The odds of "other psychiatric disorder" associated with an adult sexual assault could not be calculated because no participants reported a history of adult sexual assault and met criteria for this category without meeting criteria for PTSD, MDD, or SUD.

* $p < .05$.

** $p < .01$.

Table 6

Summary of significant predictors of psychiatric symptom outcomes in patients with at least one Axis I disorder: study aim 2.

Dependent variable	<i>B</i>	<i>P</i>	<i>R</i> ²	Adjusted <i>R</i> ²
Davidson trauma scale			.27	.23
Combat exposure	0.32	<.001		
Medical/unexpected death	0.28	<.001		
Adult physical assault	0.17	.035		
Beck depression inventory-II			.23	.18
Combat exposure	0.18	.016		
Medical/unexpected death	0.32	<.001		
Alcohol use disorders identification test			.20	.15
Age	-0.32	<.001		
Gender	0.18	.026		

Overall models for all four symptom outcomes were statistically significant ($p < .01$). The positive beta weight indicates that male gender was associated with higher AUDIT scores.