

The effects of prior combat experience on the expression of somatic and affective symptoms in deploying soldiers

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Abstract

Objective: Deployment to a combat zone is undoubtedly an extremely stressful experience. It was hypothesized that, when faced with an impending wartime deployment, soldiers with prior combat experience would report minimal emotional problems accompanied by high rates of somatic complaints compared with combat-naïve soldiers. **Methods:** Self-reports of posttraumatic stress disorder (PTSD) and affective and somatic complaints were collected from 2068 U.S. soldiers just prior to combat deployment during Operation Iraqi Freedom. **Results:** Although the percentage of soldiers scoring positive for PTSD was nearly

identical for the experienced and inexperienced groups, scores on the Affective and Somatic scales differed as a function of prior combat history. Previous combat experience was associated with lower affective and greater somatic complaints relative to combat-naïve soldiers. **Conclusions:** Consistent with theories of stress reaction, repression, and somatic amplification, combat-experienced soldiers reported limited affective complaints but greater somatic complaints relative to soldiers without combat experience.

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Introduction

Since the initiation of Operation Enduring Freedom in 2002 and Operation Iraqi Freedom (OIF) in 2003, tens of thousands of U.S. military personnel have been directly involved in sustained ground combat operations. Upon their return home following deployment, these soldiers have shown significantly higher rates of posttraumatic symptom reporting relative to their predeployment levels [1]. Recent survey data indicate that upon returning from combat operations, those soldiers reporting the highest rates of psychiatric symptoms were least likely to seek mental health services. Soldiers with the greatest need for mental health services were also most likely to report concerns that seeking treatment from a mental health professional would cause them to be viewed as weak or less capable in the eyes of their leaders and fellow soldiers [1]. Even within civilian settings, most psychiatric referrals initially present with

somatic complaints rather than overt psychiatric or emotional complaints [2–4], possibly due to the lesser perceived stigma associated with seeking help for physical rather than mental health problems in some cultures [5,6] or even through somatization or conversion of emotional distress into physical symptoms [7,8].

Somatic complaints have a high comorbidity with other psychiatric problems, including depression, anxiety, and posttraumatic stress [9,10]. Some evidence suggests that attempts to cope with emotional distress via avoidant coping or repressive processes may be associated with selective amplification of somatic symptoms [11–13]. A number of studies suggest that exposure to combat may increase subsequent vulnerability to psychiatric difficulties [14], including the development of posttraumatic stress disorder (PTSD), higher rates of somatization [15–17], and more reserved emotional expressiveness [18]. These findings suggest that soldiers with prior combat experience may be particularly prone to expressing subsequent stress via somatic channels, especially given the perceived barriers to mental health care within the military community [1]. For soldiers who have survived an initial combat experience and

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returned home, it may be a qualitatively different experience to return to a combat situation yet again. During wartime, the immediate predeployment phase presents a unique opportunity to evaluate a large group of soldiers as they simultaneously prepare for a major and potentially life-altering stressful experience. As of this writing, no studies have examined how prior combat experience affects the psychological well-being and stress reactions of active duty soldiers as they depart for a subsequent combat deployment.

The present study examined whether soldiers with prior combat experience would demonstrate clearly distinguishable patterns of somatic versus emotional symptom complaints relative to soldiers without combat histories during the weeks leading up to an inevitable deployment to a combat zone. To address this question, we surveyed a large group of U.S. airborne infantry soldiers just prior to their deployment as part of the initial invasion force in OIF. While most of these soldiers had never experienced combat (91.6%), a sizable number had participated in combat operations during previous military deployments (8.4%). Based on previous research suggesting that many individuals, particularly those with a history of exposure to traumatic stress, may demonstrate selective amplification of somatic symptoms, it was hypothesized that soldiers with prior combat experience would cope with the stress of an imminent combat deployment via avoidance of emotional expression (i.e., reduced affective symptom reporting) with an associated increase in somatic symptom expression (i.e., increased somatization), whereas soldiers without prior combat experience would show the opposite pattern, reporting greater affective than somatic complaints.

Method

Participants

Survey responses were collected from 2530 U.S. Army soldiers of the 82nd Airborne Division in February of 2003, 2 weeks prior to a yearlong deployment to Iraq as part of OIF. These data were collected as a subset of a larger ongoing longitudinal study on the effects of combat deployment on the mental health and well-being of soldiers [1]. Because only 26 soldiers (1%) were female, these respondents were excluded in order to maintain a homogeneous sample for this particular study. Of the male soldiers, 2068 respondents (81.7%) provided complete data for the primary scales of interest and thus comprised the sample for the present study. Based on self-report, 173 soldiers had previously participated in combat operations (e.g., Afghanistan, Somalia, and the first Persian Gulf War) and were classified as combat veterans (VETs) for the present study. Most soldiers were between the ages of 18 and 24 (63.5%), followed by those between 25 and 29 (20.9%), those between 30 and 39 (14.2%), and those who are 40 and above (1.5%). The majority of the soldiers were Caucasian/

White (72.2%), followed by Hispanic (12.5%), African American (7.6%), and Asian/Pacific Islander (3.2%); those classified as “Other” account for 4.4%. The majority of respondents (76.7%) reported having earned a high school diploma or graduate equivalency diploma as their highest level of education, whereas 14.6% reported having earned up to a college degree. Survey participants were drawn mostly from the junior enlisted ranks between E1 and E4 (61%), followed by junior noncommissioned officers (NCOs) with ranks of E5 and E6 (25.1%) and junior officers with ranks of O1 to O3 (7.5%). Senior NCOs (E7–E9) comprised 4.8% of the sample.

Measures

Participants completed a survey that included a broad range of questions assessing emotional and physical well-being, family issues, mental health and medical service utilization, past and current military experience, and basic demographic information. Items included on the survey were drawn from assessment batteries previously used in army occupational stress research at the Walter Reed Army Institute of Research and asked questions regarding prior service in combat operations. Specifically, soldiers were asked to answer “yes” or “no” to the following question: “Have you ever served in a combat operation?” Based on their answers, soldiers were classified as prior VETs or noncombat (NO-COM) exposed. For the present study, a modified version of the Patient Health Questionnaire (PHQ) [19] was included in the survey. In its standard form, the PHQ includes a 13-item scale to measure somatoform disorder, a 9-item scale to measure major depressive syndrome, and a 7-item scale to measure complaints consistent with a nonspecific anxiety syndrome. For the depression and anxiety scales of the standard PHQ, symptom complaints are reported on a four-point scale ranging from 1 (*not at all*) to 4 (*nearly every day*) for a period covering the previous 4-week period. For the somatoform disorder scale, symptoms are described on a three-point scale ranging from 1 (*not bothered*) to 3 (*bothered a lot*) referring to the previous 4-week period. To maintain consistency with the original PHQ, we retained the same 3- and 4-item response options in the present survey. Because a close reading of the items in the standard PHQ revealed that 3 items of the PHQ anxiety scale are virtually identical in wording to their counterpart items on the depression scale (e.g., “trouble concentrating on things, such as reading the newspaper or watching television” for the depression scale vs. “trouble concentrating on things, such as reading a book or watching TV” for the anxiety scale), we chose to slightly modify the scales to reduce redundancy in the present survey. Specifically, the 3 items that are repeated across the two subscales of the standard PHQ were presented only once in the survey. The modified version included 13 items assessing symptoms of depression and anxiety and 12 items assessing somatic complaints. In

addition to health-related questions, the survey asked questions related to PTSD. The questions were taken directly from the 17-item National Center for PTSD Checklist of the Department of Veterans Affairs [20,21].

Survey procedures

Soldiers were assembled by their unit leaders in a large auditorium and were given a short briefing about the nature of the survey and its intended uses. During the briefing, soldiers were informed that their identities and individual survey responses would remain anonymous and that completion of the survey was entirely voluntary. Prior to participation, each soldier completed and returned a written informed consent form that was collected separately from the survey. Soldiers were permitted as much time as needed to complete the survey, though most finished within less than 45 min.

Prevalence rates

In the present study, the PHQ items were scored in two ways [19]. First, the Emotional Disorder items were scored according to published algorithms to determine the prevalence of emotional disorder syndromes including Major Depressive Syndrome (indicating that the respondent had been bothered by five or more diagnostic mood symptoms for *more than half the days* of the past 4 weeks), Other Depressive Syndrome (indicating that the respondent had been bothered by two to four diagnostic mood symptoms for *more than half the days* of the past 4 weeks), and Other Anxiety Syndrome (indicating that the respondent had been bothered by a core symptom of anxiety, worry, or panic plus three or more diagnostic anxiety-related symptoms for *more than half the days* of the past 4 weeks). The Somatization Disorder items were scored according to published algorithms (indicating that the respondent had been *bothered a lot* by three or more diagnostic somatic symptoms during the past 4 weeks). PTSD was scored in the same manner described by Hoge et al. [1]. Specifically, soldiers were scored positive for possible PTSD if they scored at least 50 on the scale (scale range=17 to 85) and reported at least one intrusion symptom, three avoidance symptoms, and two hyperarousal symptoms classified as at least moderately severe.

To facilitate direct comparison across the two scales, we converted scores to standard *z* scores based on the entire sample. The *z* scores were calculated by summing the total raw score on each scale (e.g., the total score for the 12 items assessing somatic complaints from the PHQ) for each soldier. The sample mean for the scale was then subtracted from each soldier's score on that scale and divided by the standard deviation of the sample to yield a *z* score. This procedure yielded a standardized *z* score for the Affective and Somatic scales. Because scores for each participant were transformed to a standardized scale, we compared the *z* scores obtained by the VET and NO-COM groups with a repeated-measures analysis of variance

(ANOVA). To remove the effects of age and possible posttraumatic stress reactions on symptom reporting, we also entered age and PTSD total scores as covariates within a second repeated-measures analysis of covariance (ANCOVA). Interactions were decomposed using the method of simple main effects [22].

Results

Internal consistency of PHQ

Coefficient alpha was .92 for the affective items and .82 for the somatic/health items, suggesting that both sets of items demonstrated high internal consistency.

Prevalence rates

Prevalence rates were calculated to evaluate the proportion of soldiers scoring beyond clinically significant cutoff scores for symptoms of depression, anxiety, and somatic concerns [19]. The prevalence of possible PTSD in this sample was also examined using the National Center for PTSD Checklist.

Depression

The proportion of soldiers reporting five or more clinically significant symptoms consistent with major depression was 11.5%. This prevalence rate did not differ significantly between VETs (8.1%) and NO-COM soldiers (11.8%; $\chi^2=2.16$, $P=ns$). However, when the criteria were relaxed to only require endorsement of two to four symptoms (i.e., Other Depressive Syndrome), 22.1% of the soldiers scored in this range. Moreover, there was a significant difference between the rates of Other Depressive Syndrome between the two combat experience groups ($\chi^2=4.65$, $P=.031$). Significantly fewer VETs (12.1%) scored positive for Other Depressive Syndrome compared with NO-COM soldiers (23.1%).

Anxiety

Overall, the proportion of soldiers meeting diagnostic criteria for Other Anxiety Syndrome according to the PHQ criteria was 15.0%. The prevalence rates between the VET (10.4%) and NO-COM (15.4%) groups were not significantly different ($\chi^2=3.12$, $P=ns$).

Somatization

The proportion of soldiers meeting symptom criteria consistent with probable somatoform disorder was 8.7%. VETs (8.1%) were no more likely to meet this diagnostic criterion than NO-COM soldiers (8.7%; $\chi^2=0.76$, $P=ns$).

PTSD

In this sample, 4.7% of the soldiers met the strict criteria for possible PTSD using the scoring criteria outlined by

Hoge et al. [1]. The prevalence rates for possible PTSD between the VET (4.6%) and NO-COM (4.7%) groups were nearly identical ($\chi^2=0.002$, $P=ns$).

Effects of combat experience

Affective and Somatization scale z scores were entered into a 2×2 repeated-measures ANOVA with the two scales as within-subject factors and prior combat experience as a between-group factor. As evident in Fig. 1, there was a significant interaction between combat experience and symptom expression [$F(1,2066)=11.39$, $P<.001$]. Analysis of simple main effects showed that Affective symptom scores were significantly lower [$F(1,2066)=10.39$, $P<.001$] than Somatic symptom scores for the VETs, whereas NO-COM soldiers showed no difference [$F(1,2066)=0.95$, $P=ns$] between Affective and Somatic scores. Combat exposure appeared to have an effect on Affective scores, as VETs scored significantly lower than NO-COM soldiers [$F(1,2066)=6.43$, $P=.011$]. In contrast, there was no difference between VETs and NO-COM soldiers on the Somatic scale [$F(1,2066)=0.15$, $P=ns$].

Covariation for age and PTSD scores

VET soldiers were significantly older than NO-COM soldiers ($\chi^2=493.09$, $P<.001$). Overall, 67.1% of VETs were between the ages of 30 and 39 years, whereas the largest percentage (41.6%) of NO-COM soldiers was between the ages of 20 and 24 years. Given that somatic complaints may increase [23,24] and affective symptoms decline as individuals grow older [25], age was included as a covariate in a repeated-measures ANCOVA with the same variables. In addition, because scores on the PTSD scale were correlated

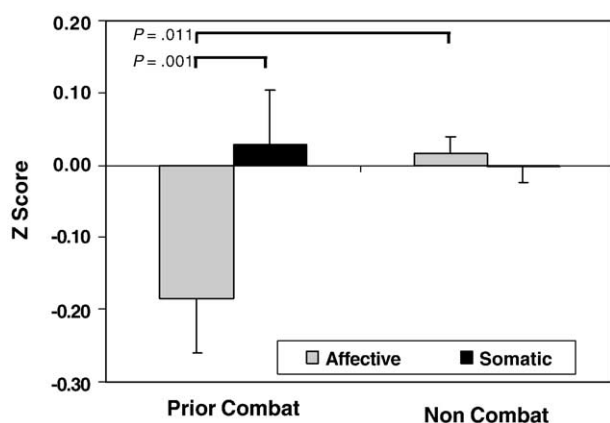


Fig. 1. Estimated marginal means for the Affective and Somatic z scores for soldiers with and without prior combat experience (Prior Combat and Non Combat groups, respectively). There was a significant interaction between combat experience and scores on the Affective versus Somatic scales ($P<.001$). Within the Prior Combat group, Affective symptom scores were significantly lower than scores on the Somatic symptom scale ($P=.001$). Affective symptom scores were also significantly lower in the Prior Combat group than the Non Combat group ($P=.011$).

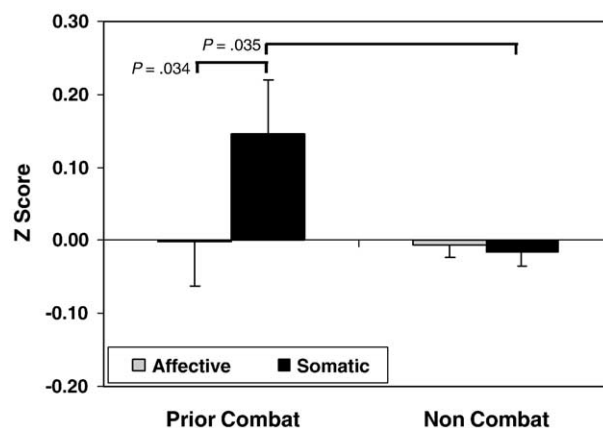


Fig. 2. Estimated marginal means for the Affective and Somatic z scores for soldiers with and without prior combat experience (Prior Combat and Non Combat groups, respectively) following covarying for age and total PTSD symptom scores. A significant interaction between combat experience and scores on the Affective versus Somatic scales remained following statistical correction for age and PTSD symptoms ($P=.032$). After this correction, Somatic symptom scores were significantly higher in the Prior Combat group than the Non Combat group ($P=.035$). Within the Prior Combat group, scores on the Somatic scale were significantly higher than scores on the Affective symptom scale ($P=.034$).

with the Affective scale ($r=.67$, $P<.001$) and Somatic scale ($r=.47$, $P<.001$) z scores, total PTSD score was also included as a second covariate. With age and total PTSD score entered as a covariate, the interaction between prior combat experience and symptom expression remained significant [$F(1,1998)=4.63$, $P=.032$]. With age and PTSD score statistically controlled, the source of the interaction shifted away from the Affective scale to the Somatic scale. As seen in Fig. 2, with age and PTSD as covariates, there was no significant difference between VETs and NO-COM soldiers in their self-reported affective complaints [$F(1,1998)=0.005$, $P=ns$], but there was a significant difference between these two groups in their somatic complaints, with VETs scoring significantly higher than NO-COM soldiers [$F(1,1998)=4.46$, $P=.035$]. Furthermore, whereas NO-COM soldiers showed no significant difference between their affective and somatic symptom reporting [$F(1,1998)=0.24$, $P=ns$], VETs showed significantly higher scores on the Somatic symptom scale relative to their scores on the Affective scale [$F(1,1998)=4.52$, $P=.034$]. Interestingly, contrary to our expectations, age was found to correlate negatively with Affective ($r=-.20$, $P<.001$) and Somatic ($r=-.11$, $P<.001$) scale scores, indicating that the expression of both types of symptoms actually declined slightly among older soldiers.

Discussion

Despite similar rates of diagnostic classification between soldiers with and without prior combat experience, these two groups differed in the relative magnitude of somatic versus affective complaint reporting. In the week leading up

to an imminent combat deployment, soldiers with prior combat experience reported lower rates of affective complaints than soldiers without combat experience. In addition, when scores on the two scales were compared, VETs tended to score relatively higher on the Somatic scale relative to the Affective scale. In contrast, soldiers without such experience did not differ in their scores on the two scales. Even after statistically controlling for the potential increase in somatic complaints due to age [26] and posttraumatic symptoms, the results showed that the VETs reported significantly greater somatic complaints relative to the combat-naïve soldiers. In fact, somatic complaints were negatively correlated with age, suggesting that the present findings among combat VETs are not the result of greater somatic symptom reporting by older respondents.

There are at least two potential explanations for these findings. First, the data suggest that on the whole, soldiers with prior combat experience may have been more psychologically prepared to cope emotionally with the impending deployment than the combat-naïve soldiers. As evident in Fig. 1, VETs reported significantly fewer emotional concerns than combat-naïve soldiers. It is conceivable that the frame of reference afforded by prior experience within a combat environment may have provided these soldiers with a greater sense of control and reduced their apprehension regarding the threats associated with combat. An alternative explanation, however, is that the low level of affective complaints among VETs may suggest a greater reliance on repressive processes such as denial, distortion, or suppression of affect, which have been suggested to lead, in some cases, to selective amplification of somatic symptoms [12,27]. This explanation is consistent with our finding that VETs showed significantly lower affective complaints relative to their own somatic complaints, as well as the finding that VETs showed significantly greater somatic complaints relative to those reported by combat-naïve soldiers after controlling for the effects of age and PTSD. As the soldiers prepared for wartime deployment, those with prior combat experience generally denied symptoms of emotional distress, reporting that they were relatively unaffected by symptoms of anxiety, nervousness, worry, depression, hopelessness, restlessness, irritability, or suicidal thoughts. This same group, however, reported comparatively greater difficulty with vague somatic problems, such as dizziness, fainting, headaches, chest pain, digestive issues, and sexual difficulties. In contrast, these differences in affective and somatic complaints were not evident in the sample of soldiers from the same unit that had never been exposed to a combat situation. The findings are consistent with other studies that report increased somatization among soldiers with prior combat exposure, especially those with a history of PTSD [15,28–30]. Interestingly, we found increased rates of somatic complaints in the group of soldiers with prior combat experience despite the absence of group differences in the preexisting prevalence rates

of PTSD and even when PTSD symptom severity was statistically controlled.

With the increased involvement of U.S. military personnel in combat and dangerous peace enforcement operations in Iraq and Afghanistan in recent years, large numbers of soldiers are now returning home with newly acquired histories of exposure to combat situations. As the number of these combat-exposed veterans continues to grow, military and civilian health care systems alike will need to accommodate the mental health needs imposed by their unique psychosocial histories. The findings of this study raise important issues regarding the evaluation and psychiatric treatment of patients presenting with a history of combat exposure. Our findings suggest that some soldiers, particularly those with a history of combat exposure, may be more prone toward amplification of somatic symptoms rather than communicating directly about emotional problems. Accordingly, physicians in primary care settings should be aware that patients with prior combat exposure may be more inclined to present with complaints of vague physical or somatic concerns and may be less likely to complain of overt psychiatric or emotional problems than patients without such a history. With this in mind, patients with combat backgrounds may routinely benefit from additional psychosocial assessment for stress-related problems including depression, anxiety disorders, and PTSD, even if these are not the presenting complaints. Furthermore, if prior combat exposure is indeed associated with greater reliance on repressive processes such as somatic amplification, patients with such exposure histories are likely to be more receptive to treatment options that are initially aimed at alleviating the presenting somatic complaints rather than directed toward psychiatric or emotional issues. If framed appropriately from the outset, this may provide a less-threatening treatment approach that permits the therapist or physician to develop a trusting therapeutic relationship initially focused on the overt physical complaints, which can open avenues for subsequently addressing the affective and psychosocial issues. Such an approach has been advocated for somatization disorders in general [31] and may lead to better acceptance and treatment compliance among this population.

As with any survey study, the present data are limited by virtue of the self-report nature of the responses. Consequently, the symptoms reported could not be verified through clinical evaluation, and the diagnostic classifications that were obtained are only estimates of the prevalence of the disorders in this military population. Because the somatic symptoms were only assessed by survey, it was not possible to rule out a biological/physiological explanation, which would be necessary (though not sufficient) before a clinical diagnosis of somatization disorder could be made [32]. Thus, without further research, caution is warranted when generalizing these findings to clinical populations. The data were also limited by the small number of female volunteers available for study. Given that females comprised

approximately 1% of the available soldiers at the time the survey was given, female responses were eliminated in order to maintain sample homogeneity. The data obtained from this survey cannot therefore be validly generalized to female soldiers. The present data are also cross-sectional in nature; hence, it is not possible to determine how the expression of somatic and affective symptoms may change over time or following additional combat exposure. These surveys, however, were collected as part of an ongoing longitudinal study on the effects of combat deployment on the well-being of soldiers, and additional findings will be reported in the near future regarding the outcome of actual combat deployment on soldiers with and without a history of combat experience.

Conclusions

Soldiers with prior combat experience reported fewer symptoms of anxiety and depression but greater reports of somatic complaints relative to soldiers without previous exposure to combat. These findings are consistent with theories of stress and repressive processes, suggesting that soldiers with prior combat experience may be more prone toward an attenuation of overt emotional symptom expression in conjunction with a selective amplification of somatic complaints relative to soldiers without such experience. Medical personnel and mental health practitioners should be aware of the potential for differential expression of stress as a function of prior combat history. Accordingly, it is recommended that VETs be screened routinely for somatic symptoms as potential indicators of emotional stress that may not be communicated through overt self-report channels. When treating VETs, tailoring intervention approaches to focus initially on treating the somatic symptoms may reduce defensiveness and facilitate treatment compliance.

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