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THE NATIONAL CENTER FOR PTSD: THE PAST 10 YEARS

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Scientific and clinical interest in PTSD has grown exponentially in the past 20 years. No longer considered an isolated problem for Vietnam veterans, PTSD is now recognized as a major public health problem for all military veterans and active-duty personnel, given their heightened exposure to the traumatic stress of war, dangerous peacekeeping operations, and interpersonal violence. Moreover, the prevalence of disaster, severe accidents, and violence in the civilian arena makes PTSD a serious public health problem in the general population.

In 1989, the VA established the National Center for PTSD in response to a congressional mandate to address the needs of veterans with military-related PTSD. Under this mandate, the new program was charged with "carry[ing] out and promot[ing] the training of health-care and related personnel in, and research into, the causes and diagnosis of PTSD and the treatment of veterans for PTSD." In its operations, the Center would "serve as a resource center for, and promote and seek to coordinate the exchange of, information regarding all research and training activities carried out by the Veterans Administration, and by other Federal and non-Federal entities, with respect to PTSD."

After a VA-wide competition determined that no single VA site could adequately serve this unique mission, the present National Center was established as a consortium of five VA centers of excellence in PTSD, each distinguished by a particular area of expertise while also sharing common interests and concerns. Two Divisions have been added since 1989, bringing the number of sites to seven.

In its first decade of operation, the Center has come to be regarded as one of the major sources of information and activity related to PTSD, and is widely sought out for its research, education, and consultation expertise. This issue of the *PTSD Research Quarterly* presents a sampling of the almost 1,100 articles published by Center staff since 1989.

Assessment and diagnosis. For the past 10 years, the Center has focused on developing and refining measures to improve diagnostic accuracy and to assess traumatic exposure. Most of this work is conducted under the leadership of the Center's Behavioral Science Division, which, in 1997, co-edited a comprehensive volume on the assessment

of PTSD (Wilson & Keane). The Division has developed some of the most widely used measures in the world, such as the Clinician Administered PTSD Scale (CAPS). The CAPS has excellent psychometric properties (Blake et al., 1995). A recent paper presented 9 scoring rules for using the CAPS for different purposes (Weathers et al., 1999). Another recent paper reported the results of a large VA Cooperative Study on the utility of psychophysiological measures for assessing PTSD (Keane et al., 1998).

Etiology. Because individuals with PTSD show a variety of changes in memory and attention, as well as changes in brain structures and functioning, psychobiology is an important part of the Center's research program. Most of this work is conducted at or coordinated by the Clinical Neurosciences Division, which played a critical role identifying the altered function of the hypothalamic-pituitary-adrenocortical axis in PTSD (Mason et al., 1990; Yehuda et al., 1991). Other investigations have focused on related aspects of the stress response in PTSD, such as elevations of corticotrophin-releasing-factor (Bremner, Licinio et al., 1997) and catecholamines (Southwick et al., 1993). In recent years, another line of investigation has demonstrated structural abnormalities of the hippocampus, a key brain structure that plays a significant role in learning and memory (Bremner et al., 1995). A good summary of the psychobiological research program in the Center, as well as in the rest of the world, is provided in the volume by Friedman et al. (1995).

Yet another line of investigation involves the study of sleep, which is conducted at the Sleep Laboratory housed at the Education Division (Woodward et al., 1996). Other work aims to better understand the symptoms of PTSD, such as numbing (Litz, 1992), and how numbing and other symptoms affect attention and memory (Litz et al., 1996).

Center investigators were among the first to study risk factors for PTSD by using measures that were collected from trauma-exposed individuals prior to exposure (Schnurr et al., 1993a). The Behavioral Science and Women's Health Sciences Divisions have been at the forefront of state-of-the-art statistical approaches to studying the etiology of PTSD, using structural equation modeling to examine how premilitary, war-zone, and postmilitary factors relate to the severity of PTSD symptoms in Vietnam veterans (King et al., 1996; King et al., 1998).

Outcomes. Although Center research has demonstrated that traumatization can lead to positive growth under certain circumstances (Schnurr et al., 1993b), PTSD usually has profound negative effects

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on functioning and well-being, especially in chronic cases (Friedman & Rosenheck, 1996). Center research addresses the numerous outcomes associated with PTSD and traumatization. For example, studies have looked at how psychological trauma affects interpersonal relationships, such as marriage, and the link between PTSD and perpetration of violence (Byrne & Riggs, 1996). Another important area concerns the negative physical health consequences associated with PTSD (Friedman & Schnurr, 1995; Schnurr et al., in press; Taft et al., 1999).

Treatment. The development and evaluation of treatments for PTSD has always been a focus of the Center's research activity (Abueg & Fairbank, 1992; Chemtob et al., 1997; Kosten et al., 1991). Center investigators also have produced articles and books to guide clinicians in the use of these techniques (Follette et al., 1998; Friedman, 1991; Young & Blake, 1999). One of the most significant publications, produced in collaboration with the International Society for Traumatic Stress Studies, is the first comprehensive practice guideline for treating PTSD (Foa et al., in press).

Evaluation. Since 1989, the Northeast Program Evaluation Center has served as the Evaluation Division of the Center and has monitored the performance of treatment for PTSD at medical centers across the VA system. One aspect of this work has involved an evaluation of long-term and short-term inpatient care (Fontana & Rosenheck, 1997). Another aspect has been the development of a performance monitoring system based on the accessibility of services, quality of care, efficiency of service delivery, and veterans' satisfaction (Rosenheck et al., 1999). The goal of this work is to provide clinicians and policymakers with information to guide them in developing and refining systems of care (e.g., Fontana & Rosenheck, 1996).

Special populations. Some research efforts are aimed at understanding and dealing with the unique circumstances of special populations. Research on the needs of women veterans has been a priority since the Center's inception. The substantial growth of this research resulted in the creation of a Women's Health Sciences Division in 1994. One of the earliest efforts to serve the need of women veterans was the construction of a scale specifically designed to assess the types of traumatic exposures women are likely to experience in a war zone (Wolfe et al., 1993). An important aspect of Center research is a focus on the study of how sexual harassment during military service relates to the development of PTSD (Fontana & Rosenheck, 1998; Wolfe et al., 1998).

The Center has conducted a number of studies of veterans who served in the Persian Gulf War. The Women's Health Sciences Division began a large longitudinal project with a group of over 3,000 Gulf War veterans, who were assessed initially within 5 days of their return from the Gulf. The latest publication on this sample reported on the relationship between PTSD and self-reported health problems (Wolfe et al., 1999). The Clinical Neurosciences Division has been following a different cohort, on which studies investigated topics including memory (Southwick et

al., 1997) and the startle response (Morgan et al., 1996).

The Center also has a program of research on the needs of minority veterans, with the Pacific Island Division taking the lead in this area. A conference on ethnocultural aspects of PTSD, co-sponsored with the National Institute of Mental Health, resulted in a widely cited book on the topic (Marsella et al., 1996). One focus of Center publications on ethnocultural issues has been on ways that race affects treatment (Rosenheck et al., 1995) and the treatment needs of minority veterans (Loo et al., 1998).

Center researchers have collaborated with the Department of Defense in order to study active-duty personnel, "the veterans of tomorrow." This collaboration has yielded unique information about the stress associated with peacekeeping (Litz et al., 1997). Another unique program of research is using neurobiological measures to assess the effects of a mock captivity paradigm employed by the military to select individuals for especially hazardous duty (Morgan et al., in press).

The Future. One objective of studying active-duty personnel is the development of strategies aimed at prevention, a topic that will be a particular focus for the Center in the coming decade. Treatment also will be a particular focus. Several clinical trials are underway, including the largest study of psychotherapy for PTSD ever conducted and a study of a structured brief group treatment that targets ambivalence about changing PTSD symptoms and comorbid problem behaviors in male Vietnam veterans. One project is examining effective treatments for anger in veterans with PTSD. Another, conducted in conjunction with the Department of Defense, is a randomized clinical trial to evaluate a cognitive approach to treating female victims of spousal battering. The Clinical Neurosciences also continues to evaluate drug treatments, such as clonidine and those that affect serotonin function.

During the past decade, Center investigators have valued the many opportunities provided by the Center and the VA to advance the diagnosis, understanding, and treatment of PTSD. We are grateful for the support and collaboration of individuals throughout the VA, and around the world. This input has been crucial to the development of numerous initiatives, and we look forward to continuation and expansion of these relationships.

SELECTED ABSTRACTS

BLAKE, D.D., WEATHERS, F.W., NAGY, L.M., KALOUPEK, D.G., GUSMAN, F.D., CHARNEY, D.S., & KEANE, T.M. (1995). **The development of a Clinician-Administered PTSD Scale.** *Journal of Traumatic Stress, 8*, 75-90. Several interviews are available for assessing PTSD. These interviews vary in merit when compared on stringent psychometric and utility standards. Of all the interviews, the Clinician-Administered PTSD Scale appears to satisfy these standards most uniformly. The CAPS-1 is a structured interview for assessing core and associated symptoms of PTSD. It assesses the frequency and intensity of each symptom using standard prompt questions and explicit, behaviorally anchored rating scales. The CAPS-1 yields both continuous and dichotomous scores for current and lifetime PTSD symptoms.

Intended for use by experienced clinicians, it also can be administered by appropriately trained paraprofessionals. Data from a large scale psychometric study of the CAPS-1 have provided impressive evidence of its reliability and validity.

BREMNER, J.D., RANDALL, P.K., SCOTT, T.M., BRONEN, R.A., SEIBYL, J.P., SOUTHWICK, S.M., DELANEY, R.C., MCCARTHY, G., CHARNEY, D.S., & INNIS, R.B. (1995). **MRI-based measurement of hippocampal volume in patients with combat-related posttraumatic stress disorder.** *American Journal of Psychiatry*, 152, 973-981. **OBJECTIVE:** Studies in nonhuman primates suggest that high levels of cortisol associated with stress have neurotoxic effects on the hippocampus, a brain structure involved in memory. The authors previously showed that patients with combat-related PTSD had deficits in short-term memory. The purpose of this study was to compare the hippocampal volume of patients with PTSD to that of subjects without psychiatric disorder. **METHOD:** Magnetic resonance imaging was used to measure the volume of the hippocampus in 26 Vietnam combat veterans with PTSD and 22 comparison subjects selected to be similar to the patients in age, sex, race, years of education, socioeconomic status, body size, and years of alcohol abuse. **RESULTS:** The PTSD patients had a statistically significant 8 percent smaller right hippocampal volume relative to that of the comparison subjects, but there was no difference in the volume of other brain regions (caudate and temporal lobe). Deficits in short-term verbal memory as measured with the Wechsler Memory Scale were associated with smaller right hippocampal volume in the PTSD patients only. **CONCLUSIONS:** These findings are consistent with a smaller right hippocampal volume in PTSD that is associated with functional deficits in verbal memory.

CHEMTOB, C.M., NOVACO, R.W., HAMADA, R.S., & GROSS, D.M. (1997). **Cognitive-behavioral treatment for severe anger in posttraumatic stress disorder.** *Journal of Consulting and Clinical Psychology*, 65, 184-189. With a randomized group design, a 12-session anger treatment was evaluated with severely angry Vietnam War veterans suffering combat-related PTSD. 8 participants in anger treatment and 7 in a routine clinical care control condition completed multiple measures of anger control, anger reaction, and anger disposition, as well as measures of anxiety, depression, and PTSD at pre- and posttreatment. Controlling for pretreatment scores, significant effects were found on anger reaction and anger control measures but not on anger disposition or physiological measures. 18-month follow-up (for both completers and dropouts) supported the posttreatment anger control findings. The challenges of treatment research with this refractory population are discussed.

FOA, E.B., KEANE, T.M., & FRIEDMAN, M.J. (in press). *PTSD treatment guidelines*. New York: Guilford. This book is the authoritative source on the state-of-the-art on evidence-based research on PTSD treatment. It was officially authorized by the International Society for Traumatic Stress Studies and has involved National Center personnel as editors and authors. Each chapter is written by acknowledged experts in their specific clinical area so that the empirical information can be integrated with clinical experience. Topics covered are: Assessment; acute interventions & debriefing; cognitive-behavioral therapy; pharmacotherapy; group therapy; treatments for children; EMDR; psychodynamic psychotherapy; in-patient treatment; social rehabilitation therapies; marital & family therapy; hypnotherapy; and creative arts therapies. This volume is intended for the use of practicing clinicians as a reference source to guide their practice and promote evidence-based practice patterns.

FONTANA, A., & ROSENHECK, R.A. (1997). **Effectiveness and cost of the inpatient treatment of posttraumatic stress disorder: Comparison of three models of treatment.** *American Journal of Psychiatry*, 154, 758-765. **OBJECTIVE:** This study compared the outcomes and costs of 3 models of VA inpatient treatment for PTSD: (1) long-stay specialized inpatient PTSD units, (2) short-stay specialized evaluation and brief-treatment PTSD units, and (3) nonspecialized general psychiatric units. **METHOD:** Data were drawn from 785 Vietnam veterans undergoing treatment at 10 programs across the country. The veterans were followed up at 4-month intervals for 1 year after discharge. Successful data collection averaged 66.1% across the 3 follow-up intervals. **RESULTS:** All models demonstrated improvement at the time of discharge, but during follow-up symptoms and social functioning rebounded toward admission levels, especially among participants who had been treated in long-stay PTSD units. Veterans in the short-stay PTSD units and in the general psychiatric units showed significantly more improvement during follow-up than veterans in the long-stay PTSD units. Greatest satisfaction with their programs was reported by veterans in the short-stay PTSD units. Finally, the long-stay PTSD units proved to be 82.4% and 53.5% more expensive over 1 year than the short-stay PTSD units and general psychiatric units, respectively. **CONCLUSIONS:** The paucity of evidence of sustained improvement from costly long-stay specialized inpatient PTSD programs and the indication of high satisfaction and sustained improvement in the far less costly short-stay specialized evaluation and brief-treatment PTSD programs suggest that systematic restructuring of VA inpatient PTSD treatment could result in delivery of effective services to larger numbers of veterans.

FRIEDMAN, M.J., CHARNEY, D.S., & DEUTCH, A.Y. (1995). *Neurobiological and clinical consequences of stress: From normal adaptation to post-traumatic stress disorder*. Philadelphia: Lippincott-Raven. This book is divided into five sections, each of which is preceded by a brief overview to maintain context and continuity. Part I includes eight chapters that emphasize basic science studies of stress from a variety of approaches. Part II moves from primary to synthesis. Its seven chapters concern animal models of neurobiological processes that have heuristic value for clinical theory on the pathophysiology of PTSD. Part III consists of seven chapters concerning laboratory and clinical abnormalities detected in human subjects exposed to normal stressors and in PTSD patients exposed to traumatic stressors. Part IV contains seven chapters that synthesize findings presented previously and attempt to show their relevance for the diagnosis and treatment of PTSD. Part V, the final chapter, is an overview of the work presented throughout this book. It includes our speculations on its significance and on its implications for future research and treatment.

FRIEDMAN, M.J., & SCHNURR, P.P. (1995). **The relationship between trauma, post-traumatic stress disorder, and physical health.** In M.J. Friedman, D.S. Charney, & A.Y. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaptation to post-traumatic stress disorder* (pp. 507-524). Philadelphia: Lippincott-Raven. First we review the literature on the physical health outcomes associated with traumatic events. Despite the extensive literature suggesting that exposure to stressful events may be associated with adverse health outcomes, much less has been written on the medical and somatic consequences of exposure to extreme stress. Nonetheless, reviewers have suggested that physical health may be severely and chronically impaired following traumatic experiences. Second, we review the literature on the physical health outcomes associated with PTSD. We argue that PTSD is an important mediator through which trauma

may be related to adverse outcomes. Third, we review biological and psychological correlates of PTSD that might predispose affected individuals toward increased risk for medical problems.

KEANE, T.M., KOLB, L.C., KALOUPEK, D.G., ORR, S.P., BLANCHARD, E.B., THOMAS, R.G., HSIEH, F.Y., & LAVORI, P.W. (1998). **Utility of psychophysiological measurement in the diagnosis of posttraumatic stress disorder: Results from a Department of Veterans Affairs cooperative study.** *Journal of Consulting and Clinical Psychology, 66*, 914-923. This multisite study tested the ability of psychophysiological responding to predict PTSD diagnosis (current, lifetime, or never) in a large sample of male Vietnam veterans. Predictor variables for a logistic regression equation were drawn from a challenge task involving scenes of combat. The equation was tested and cross-validated, demonstrating correct classification of approximately 2/3 of the current and never PTSD participants. Results replicate the finding of heightened psychophysiological responding to trauma-related cues by individuals with current PTSD, as well as differences in a variety of other domains between groups with and without the disorder. Follow-up analyses indicate that veterans with current PTSD who do not react physiologically to the challenge task manifest fewer reexperiencing symptoms, depression, and guilt. Discussion addresses the value of psychophysiological measures for assessment of PTSD.

KING, L.A., KING, D.W., FAIRBANK, J.A., KEANE, T.M., & ADAMS, G.A. (1998). **Resilience-recovery factors in post-traumatic stress disorder among female and male Vietnam veterans: Hardiness, postwar social support, and additional stressful life events.** *Journal of Personality and Social Psychology, 74*, 420-434. Structural equation modeling procedures were used to examine relationships among several war zone stressor dimensions, resilience-recovery factors, and PTSD symptoms in a national sample of 1,632 Vietnam veterans (26% women and 74% men). A 9-factor measurement model was specified on a mixed-gender subsample of the data and then replicated on separate subsamples of female and male veterans. For both genders, the structural models supported strong mediation effects for the intrapersonal resource characteristic of hardiness, postwar structural and functional social support, and additional negative life events in the postwar period. Support for moderator effects or buffering in terms of interactions between war zone stressor level and resilience-recovery factors was minimal.

KING, D.W., KING, L.A., FOY, D.W., & GUDANOWSKI, D.M. (1996). **Prewar factors in combat-related posttraumatic stress disorder: Structural equation modeling with a national sample of female and male Vietnam veterans.** *Journal of Consulting and Clinical Psychology, 64*, 520-531. Structural equation modeling was used to examine relationships among prewar factors, dimensions of war-zone stress, and current PTSD symptomatology using data from 1,632 female and male participants in the National Vietnam Veterans Readjustment Study. For men, previous trauma history (accidents, assaults, and natural disasters) directly predicted PTSD and also interacted with war-zone stressor level to exacerbate PTSD symptoms for high combat-exposed veterans. Male veterans who entered the war at a younger age displayed more symptoms. Family instability, childhood antisocial behavior, and age had indirect effects on PTSD for men. For women, indirect prewar effects emanated from family instability. More attention should be given to critical developmental conditions, especially family instability and earlier trauma exposure, in conceptualizing PTSD in adults.

KOSTEN, T.R., FRANK, J.B., DAN, E., MCDUGLE, C.J., & GILLER, E.L. (1991). **Pharmacotherapy for posttraumatic stress disorder using phenelzine or imipramine.** *Journal of Nervous and Mental Disease, 179*, 366-370. 60 male veterans with PTSD participated in an 8-week, randomized trial comparing phenelzine ($n=19$), imipramine ($n=23$), and placebo ($n=18$). Mean treatment retention was better on phenelzine (7.4 weeks) than on imipramine (5.6 weeks) or placebo (5.5 weeks). By week 5, both medications significantly reduced PTSD symptoms, as assessed by the Impact of Event Scale (IES), but the 44% improvement on phenelzine was greater than the 25% improvement on imipramine. The intrusion, but not the avoidance, subscale of the IES showed significant improvement, and the initial mild to moderate depressive symptoms did not significantly improve.

LITZ, B.T. (1992). **Emotional numbing in combat-related post-traumatic stress disorder: A critical review and reformulation.** *Clinical Psychology Review, 12*, 417-432. Emotional numbing symptoms are considered in the clinical literature as cardinal signs of PTSD and have been formally codified in DSM-III-R. However, the term has not been consistently defined nor adequately researched. The present paper critically reviews the extant empirical and theoretical literature in combat-related PTSD that has explored emotional numbing systems. A theoretical framework, based on Levanthal's perceptual-motor theory of emotion, is posited to account for the parameters of emotional processing in PTSD, and specific hypotheses concerning selective or differential emotional processing deficits in PTSD are described in order to clarify empirical issues about the development and maintenance of processing deficits in PTSD and to stimulate future research in this underexplored, yet clinically important area.

LITZ, B.T., ORSILLO, S.M., FRIEDMAN, M.J., EHLICH, P.J., & BATRES, A.R. (1997). **Posttraumatic stress disorder associated with peacekeeping duty in Somalia for U.S. military personnel.** *American Journal of Psychiatry, 154*, 178-184. **OBJECTIVE:** The end of the Cold War has marked a period when the U.S. military is asked to secure peace under conditions in which peace is tenuous, yet the need for resolution of the conflict is great. Combat-trained soldiers are highly visible and are exposed to threats to their lives, yet are asked to exhibit restraint and neutrality. The psychiatric consequences of peacekeeping duty under these conflicting and volatile conditions have been underresearched. The authors examined the prevalence of PTSD associated with exposure to peacekeeping duty in Somalia. **METHOD:** A large cohort of active duty personnel deployed to Somalia ($n=3,461$) were surveyed approximately 5 months after their return to the United States. A variety of military service characteristics and exposure variables and PTSD symptoms were examined. **RESULTS:** 8% of peacekeepers were found to meet diagnostic criteria for PTSD. PTSD symptom severity was best predicted by the rewards of military service, war zone stress, and frustrations with peacekeeping (e.g., restrictive rules of engagement). **CONCLUSIONS:** It is likely that the mission in Somalia represents a new paradigm of dangerous military operations for the United States. These data suggest that peacekeeping may be difficult to reconcile for some combat-trained soldiers and can create a risk for PTSD.

MARSELLA, A.J., FRIEDMAN, M.J., GERRITY, E.T., & SCURFIELD, R.M. (1996). *Ethnocultural aspects of posttraumatic stress disorder: Issues, research, and clinical applications.* Washington: American Psychological Association. The purpose of this volume is to explore and examine the role of ethnocultural aspects of PTSD through a thorough and comprehensive discussion of current theory, research, and practice on the topic. Chap-

ter authors address the topic of ethnocultural variations and similarities in the etiology, distribution, expression, clinical diagnosis, and treatment of PTSD and related stress disorders.

MASON, J.W., KOSTEN, T.R., SOUTHWICK, S.M., & GILLER, E.L. (1990). **The use of psychoendocrine strategies in post-traumatic stress disorder.** *Journal of Applied Social Psychology, 20*, 1822-1846. An overview is presented of a pilot psychoendocrine study of PTSD inpatients in comparison with several subgroups of schizophrenic and affective disorder patients. Using a hormonal profile including cortisol, norepinephrine, epinephrine, testosterone, and thyroxine, it was found that the mean values for the PTSD group were at or near the extreme end of the range for every hormone measured, i.e., relatively low for cortisol and high for the remaining hormones. The possible clinical meaning of these findings is considered in the light of prior psychoendocrine research on chronic stress. The hormonal alterations in PTSD appear to be persistent and suggest the possibility of being linked largely to traits or character structure, perhaps particularly to cognitive variables related to defense and coping mechanisms, as reviewed in detail for each hormonal system. There appears to be a potential for a fruitful union between the traumatic stress and some psychoendocrine fields and future strategies for developing and strengthening such a union are suggested.

MORGAN, C.A., WANG, S., SOUTHWICK, S.M., RASSMUSSON, A., & CHARNEY, D.S. (in press). **Plasma NPY in humans experiencing acute uncontrollable stress.** *Biological Psychiatry*. Neuropeptide-Y (NPY) is present in extensive neuronal systems of the brain and is present in high concentrations in cell bodies and terminals in the amygdala. Preclinical studies have shown that injections of NPY into the central nucleus of the amygdala function as a central anxiolytic and buffer against the effects of stress. The objective of this study was to assess plasma neuropeptide-Y immunoreactivity in healthy soldiers participating in high intensity military training at the U.S. Army survival school. The Army survival school provides a means of observing individuals under high levels of physical, environmental, and psychological stress and consequently, is considered a reasonable analogue to stress incurred as a result of war or other catastrophic experiences. **METHOD:** Plasma levels of NPY were assessed at baseline (prior to initiation of training), and 24 hours after the conclusion of survival training in 49 subjects, and at baseline and during the Prisoner of War (POW) experience (immediately after exposure to a military interrogation (in 21 additional subjects). **RESULTS:** Plasma NPY levels were significantly increased, compared to baseline, following interrogations and were significantly higher in Special Forces soldiers compared to non-Special Forces soldiers. NPY elicited by interrogation stress was significantly correlated to the subjects' behavior during interrogations and tended to be negatively correlated to symptoms of reported dissociation. Twenty-four hours after the conclusion of survival training, NPY had returned to baseline in Special Forces soldiers, but remained significantly lower than baseline values in non-Special Forces soldiers. **DISCUSSION:** These results provide evidence that uncontrollable stress significantly increases plasma NPY in humans, and when extended, produces a significant depletion of plasma NPY. Stress induced alterations of plasma NPY were significantly different in Special Forces soldiers compared to non-Special Forces soldiers. NPY was positively correlated with behavioral performance under stress and negatively correlated with psychological symptoms of dissociation. These data support the idea that NPY may be involved in the enhanced stress resilience seen in humans.

ROSENHECK, R.A., FONTANA, A., & COTTROL, C. (1995). **Effect of clinician-veteran racial pairing in the treatment of posttraumatic stress disorder.** *American Journal of Psychiatry, 152*, 555-563. **OBJECTIVE:** This study explored the effect of veterans' race and of the pairing of veterans' and clinicians' race on the process and outcome of treatment for war-related PTSD. **METHOD:** As part of the national evaluation of the PTSD Clinical Teams program of the VA, data on assessment of 4,726 white and black male veterans at admission to the program and on the race and other characteristics of their 315 primary clinicians were obtained. Measures of service delivery and treatment emphasis were obtained 2, 4, 8, and 12 months after program entry, along with clinicians' ratings of improvements. **RESULTS:** After control for sociodemographic characteristics, clinical status, and clinicians' characteristics, multivariate analysis showed that black veterans had significantly lower program participation ratings than white veterans on 10 of 24 measures, but no differences in clinicians' improvement ratings were noted. Additional analyses showed that pairing of white clinicians with black veterans was associated with lower program participation on 4 of the 24 measures and with lower improvement ratings on 1 of 15 measures. When treated by either black or white clinicians, black veterans had poorer attendance than white veterans, seemed less committed to treatment, received more treatment for substance abuse, were less likely to be prescribed antidepressant medications, and showed less improvement in control of violent behavior. **CONCLUSIONS:** Although no differences were noted on most measures, the pairing of black veterans with white clinicians was associated with receiving fewer services. According to some other measures, black veterans received less intensive services regardless of the clinician's race.

SCHNURR, P.P., ROSENBERG, S.D., & FRIEDMAN, M.J. (1993a). **Change in MMPI scores from college to adulthood as a function of military service.** *Journal of Abnormal Psychology, 102*, 288-296. We examined changes in MMPI scores from adolescence to adulthood in a longitudinal study of 540 men who attended college during the Vietnam War. Using change scores that were adjusted for initial values, we compared civilians to veterans who were grouped according to combat exposure: None, peripheral, or direct. In cross-sectional analyses, the groups differed only as adults. Groups were similar in relative stability but differed by multivariate analysis in absolute change on the clinical scales. Only veterans with peripheral exposure differed from civilians in multivariate contrasts, even after controlling for premilitary variables. Effect sizes were small. Results suggest that combat exposure does not produce uniformly negative outcomes and may have positive effects in select populations.

SCHNURR, P.P., SPIRO, A., & PARIS, A.H. (in press). **Physician-diagnosed medical disorders in relation to PTSD symptoms in older male military veterans.** *Health Psychology*. The association between physician-diagnosed medical disorders and combat-related PTSD symptoms was examined in 605 male combat veterans of World War II and the Korean conflict. Physician exams were performed at periodic intervals beginning in the 1960s. PTSD symptoms were assessed in 1990. Cox regression was used to examine the onset of each of 12 disorder categories as a function of PTSD symptoms, controlling for age, and smoking, alcohol use, and body weight at study entry. Even with control for these factors, PTSD symptoms were associated with increased onset of arterial, lower gastrointestinal, dermatologic, and musculoskeletal disorders. There was only weak evidence that PTSD mediated the effects of combat exposure on morbidity. Possible mediators of the relationship between combat exposure, PTSD, and physical morbidity are discussed.

SOUTHWICK, S.M., KRISTAL, J.H., MORGAN, C.A., JOHNSON, D.R., NAGY, L.M., NICOLAOU, A.L., HENINGER, G.R., & CHARNEY, D.S. (1993). **Abnormal noradrenergic function in posttraumatic stress disorder.** *Archives of General Psychiatry*, 50, 266-274. To evaluate possible abnormal noradrenergic neuronal regulation in patients with PTSD, the behavioral, biochemical, and cardiovascular effects of intravenous yohimbine hydrochloride (0.4 mg/kg) were determined in 18 healthy male subjects and 20 male patients with PTSD. A subgroup of patients with PTSD were observed to experience yohimbine-induced panic attacks (70 percent [14/20]) and flashbacks (40 percent [8/20]), and they had larger yohimbine-induced increases in plasma 3-methoxy-4-hydroxyphenylglycol levels, sitting systolic blood pressure, and heart rate than those in healthy subjects. In addition, in the patients with PTSD, yohimbine induced significant increases in core PTSD symptoms, such as intrusive thoughts, emotional numbing, and grief. These data were consistent with a large body of preclinical data that indicated that uncontrollable stress produces substantial increases in noradrenergic neuronal function. We discuss the implications of these abnormalities in noradrenergic functional regulation in relation to the long-term neurobiological sequelae of severe uncontrollable stress and the pathophysiological relationship between PTSD and other anxiety disorders, such as panic disorder.

WILSON, J.P., & KEANE, T.M. (1997). *Assessing psychological trauma and PTSD*. New York: Guilford Press. This volume developed out of the recognition that there was a need to fill a void in the standardized references in the field of traumatology, especially in the area of assessing the response to trauma and PTSD. There are three distinct parts to the organizational structure of this volume. Part I focuses on conceptual approaches and standardized measures of trauma and PTSD. Part II of this volume is devoted to the assessment of traumatic reactions among victim and survivor populations. In Part III are seven chapters that directly concern specific techniques for the assessment of traumatic reactions, dissociative tendencies, and PTSD. Taken together as a set, the three parts of the book provide the reader with readily usable information with direct application to clinical practice, research projects, and educational curricula in colleges and universities.

WOLFE, J., PROCTOR, S.P., ERICKSON, D.J., HEEREN, T., FRIEDMAN, M.J., HUANG, M.T., SUTKER, P.B., VASTERLING, J.J., & WHITE, R.F. (1999). **Relationship of psychiatric status to Gulf War veterans' health problems.** *Psychosomatic Medicine*, 61, 532-540. **OBJECTIVE:** A growing body of research has shown that there are important links between certain psychiatric disorders and health symptom reporting. Two disorders in particular (PTSD and major depression) have been the most widely implicated to date, and this association has sometimes been used to explain the occurrence of ill-defined medical problems and increased somatic symptoms in certain groups, most recently Gulf War veterans. **METHODS:** Structured psychiatric diagnostic interviews were used to examine the presence of major psychiatric (axis I) disorders and their relation to health symptom reporting in a well-characterized, stratified subset of Gulf War veterans and a non-Gulf-deployed veteran comparison group. **RESULTS:** Rates of most psychiatric disorders were substantially lower than national comorbidity estimates, consistent with prior studies showing heightened physical and emotional well-being among active-duty military personnel. Rates of PTSD and major depression, however, were significantly elevated relative to the veteran comparison group. The diagnosis of PTSD showed a small but significant association with increased health symptom reports. How-

ever, nearly two-thirds of Gulf participants reporting moderate to high health symptoms had no axis I psychiatric diagnosis. **CONCLUSIONS:** Results suggest that rates of psychiatric illness were generally low with the exception of PTSD and major depression. Although PTSD was associated with higher rates of reported health problems, this disorder did not entirely account for symptoms reported by participants. Factors other than psychiatric status may play a role in Gulf War health problems.

WOLFE, J., SHARKANSKY, E.J., READ, J.P., DAWSON, R., MARTIN, J.A., & OUIMETTE, P.C. (1998). **Sexual harassment and assault as predictors of PTSD symptomatology among U.S. female Persian Gulf War military personnel.** *Journal of Interpersonal Violence*, 13, 40-57. Rates and sequelae of sexual harassment and assault among women in a wartime military sample were examined. A second goal was to explore the comparative impacts of these stressors and combat exposure on PTSD symptomatology. Army women ($n=160$) were interviewed on return from the Persian Gulf War and again 18 to 24 months later. Rates of sexual assault (7.3%), physical sexual harassment (33.1%), and verbal sexual harassment (66.2%) were higher than those typically found in civilian and peacetime military samples. Sexual assault had a larger impact on PTSD symptomatology than combat exposure. Frequency of physical sexual harassment was significantly predictive of PTSD symptomatology. Furthermore, the number of postwar stressful life events mediated the relationship between physical sexual harassment and symptomatology but was not related to combat exposure. Sexual assault, sexual harassment, and combat exposure appear to be qualitatively different stressors for women, with different correlates and mechanisms of action.

WOODWARD, S.H., BLIWISE, D.L., FRIEDMAN, M.J., & GUSMAN, F.D. (1996). **Subjective versus objective sleep in Vietnam combat veterans hospitalized for PTSD.** *Journal of Traumatic Stress*, 9, 137-143. 25 Vietnam combat veterans with chronic severe PTSD completed a sleep self-report questionnaire on admission to an inpatient treatment program. Between 1 and 2 months later each spent 3 or more nights in the sleep laboratory. When self-report and laboratory findings were compared, significant relationships were observed between sleep schedule items such as time-to-bed/time-out-of-bed and polysomnographic measures of sleep. In contrast, global ratings of sleep quality were generally unrelated to polysomnographic measures. These findings may have implications for survey research assessing sleep quality in traumatized populations.

YEHUDA, R., LOWY, M.T., SOUTHWICK, S.M., SHAFFER, D., & GILLER, E.L. (1991). **Lymphocyte glucocorticoid receptor number in posttraumatic stress disorder.** *American Journal of Psychiatry*, 148, 499-504. **OBJECTIVE:** The authors' objective was to investigate the possibility that glucocorticoid receptor changes may be involved in the dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis in PTSD. **METHOD:** They measured the number of lymphocyte cytosolic glucocorticoid receptors and plasma cortisol concentrations in 15 consecutively admitted male combat Vietnam veterans with PTSD and in a normal comparison group of 11 subjects. **RESULTS:** Both the patients and the normal comparison subjects showed a morning-to-afternoon decline in glucocorticoid receptor concentrations, paralleling the normal diurnal decline in cortisol levels. The number of glucocorticoid receptors was 63% greater in the morning and 26% greater in the afternoon in the patients with PTSD than in the normal subjects. No group differences in cortisol levels were observed, nor were glucocorticoid receptor number and cortisol levels correlated. The number of morning glucocorticoid receptors was positively corre-

lated with symptoms of PTSD and anxiety. **CONCLUSIONS:** These results provide further evidence for a dysregulation of the HPA axis in PTSD. The finding that patients with PTSD had a substantially greater number of lymphocyte glucocorticoid receptors than normal comparison subjects is consistent with the authors' previous observations of low 24-hour urinary cortisol excretion in subjects with PTSD. Furthermore, the receptor changes observed are opposite of those reported in major depressive disorder. The present data, along with other findings of HPA abnormalities in PTSD, support the possibility of a greater negative feedback sensitivity at one or more levels of the HPA axis.

YOUNG, B.H., & BLAKE, D.D. (1999). *Group treatments for post-traumatic stress disorder*. Philadelphia: Brunner/Mazel. Group therapy is arguably the most common mode of psychotherapy treatment for trauma survivors. This book offers detailed clinical guidelines for group treatment provided to trauma survivors. Chapters include treatment for sexual assault victims, disaster relief workers, combat veterans, motor vehicle accidents survivors, trauma survivors with co-morbid substance abuse, survivors of disaster, families of trauma survivors, homicide witnesses and survivors, adult survivors of childhood abuse, and an overview of group psychotherapy.

ADDITIONAL PUBLICATIONS

ABUEG, F.R., & FAIRBANK, J.A. (1992). **Behavioral treatment of posttraumatic stress disorder and co-occurring substance abuse.** In P.A. Saigh (Ed.), *Posttraumatic stress disorder: A behavioral approach to assessment and treatment* (pp. 111-146). Boston: Allyn and Bacon.

BREMNER, J.D., INNIS, R.B., NG, C.K., STAIB, L.H., SALOMON, R.M., BRONEN, R.A., DUNCAN, J., SOUTHWICK, S.M., KRYSTAL, J.H., RICH, D., ZUBAL, G., DEY, H., SOUFER, R., & CHARNEY, D.S. (1997). **Positron emission tomography measurement of cerebral metabolic correlates of yohimbine administration in combat-related posttraumatic stress disorder.** *Archives of General Psychiatry*, 54, 246-254.

BREMNER, J.D., LICINIO, J., DARNELL, A., KRYSTAL, J.H., OWENS, M.J., SOUTHWICK, S.M., NEMEROFF, C.B., & CHARNEY, D.S. (1997). **Elevated CSF corticotropin-releasing factor concentrations in posttraumatic stress disorder.** *American Journal of Psychiatry*, 154, 624-629.

BYRNE, C.A., & RIGGS, D.S. (1996). **The cycle of trauma: Relationship aggression in male Vietnam veterans with symptoms of posttraumatic stress disorder.** *Violence and Victims*, 11, 213-225.

FOLLETTE, V.M., RUZEK, J.I., & ABUEG, F.R. (1998). *Cognitive-behavioral therapies for trauma*. New York: Guilford.

FONTANA, A.F., & ROSENHECK, R.A. (1996). **Improving the efficiency of resource utilization in outpatient treatment of posttraumatic stress disorder.** *Administration and Policy in Mental Health*, 23, 197-210.

FONTANA, A.F., & ROSENHECK, R.A. (1998). **Duty-related and sexual stress in the etiology of PTSD among women veterans who seek treatment.** *Psychiatric Services*, 49, 658-662.

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WEATHERS, F.W., RUSCIO, A.M., & KEANE, T.M. (1999). **Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale.** *Psychological Assessment*, 11, 124-133.

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THE PTSD RESOURCE CENTER AND THE PILOTS DATABASE

Over the past ten years, the National Center for PTSD has become known worldwide as one of the leading sources for reliable information on post-traumatic stress disorder. The work of our PTSD Resource Center has made a substantial contribution to research and clinical work, and to public understanding of PTSD.

One of the National Center's first projects was the creation of a bibliographical database to index the traumatic stress literature. Despite the existence of major databases such as MEDLINE and PSYCINFO, none covers this literature in its entirety. Both its producers and its users come from a wide range of disciplines: psychiatry, psychology, social work, criminology, law, religion, and many others. In designing and creating the PILOTS database, almost every decision taken was affected by the interdisciplinary nature of both the literature itself and the constituency to be served.

An important choice was that of an indexing vocabulary. The breadth of both MEDLINE's *Medical Subject Headings* and PSYCINFO's *Thesaurus of Psychological Index Terms* made them cumbersome to use in a relatively narrow branch of literature. While both included a term specific to PTSD, neither appeared well suited to a detailed analysis of one narrow subdivision of an entire disciplinary domain. So we decided to create our own indexing vocabulary for the traumatic stress literature. The resulting PILOTS Thesaurus was published in the first *PILOTS User's Guide*, in October 1991.

At that time, PILOTS was too small to be of interest to a commercial database host. By joining the Combined Health Information Database—the joint product of several federal health agencies—we were able to make our bibliographical work accessible outside the National Center. The following year, we placed the PILOTS database on the Dartmouth College Library Online System, allowing users worldwide to search the database free of charge.

Since then the PILOTS database has grown substantially. In April 1991, when it was first made available online as part of CHID, there were 1,950 records in the file. Today

there are 16,295 documents indexed in PILOTS, including

- 11,994 journal articles
- 2,901 book chapters
- 405 books
- 800 doctoral dissertations

as well as master's theses, technical reports, and pamphlets. Complete copies of all of these documents (excepting dissertations and theses) are kept in our PTSD Resource Center, which has become one of the world's largest psychotrauma libraries.

A second edition of the *PILOTS Database User's Guide* appeared in November 1994, and a third edition is in the planning stages. This will describe the procedures for most effectively using the Dartmouth College Information System's graphical interface on the World Wide Web. Its ease of use has attracted new users to PILOTS, as is evident from the number of connections to the database:

October 1992	121	October 1996	427
October 1993	254	October 1997	1353
October 1994	345	October 1998	1947
October 1995	561	October 1999	2956

Since its debut in Fall 1995, our website has provided not only access to the PILOTS database but also a growing collection of informational resources drawing upon the expertise of all seven National Center divisions. These represent our efforts to provide accurate, dependable material on PTSD to researchers, clinicians, and lay people. Our website has been included on virtually every published list of information resources on PTSD, and is heavily used by students, librarians, and journalists. We are in the process of restructuring the site, to make it even more useful.

We look forward to the era of international cooperation that will be fostered by the new Psychotrauma Documentation Network, of which our PTSD Resource Center is a founding member. We hope that this will enable us to improve our coverage of traumatic stress literature from countries and languages not fully represented in the PILOTS database, and to make the research findings and clinical experience of our colleagues overseas more readily available to the men and women treating the veterans we serve.

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