



Annual Report for Fiscal Year 1999

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FROM THE EXECUTIVE DIRECTOR

It is hard to believe that the National Center for PTSD has completed its first decade of operation. The enthusiasm and vision with which our consortium began in 1989 have not only been sustained but have grown significantly. Our durable structure as a virtual center, the stability of our leadership, the creativity of our talented staff and the dynamism of our field have all fortified our collective dedication to our mission.

The experience of the past ten years has supported the notion "If you build it, they will come." As this and previous Annual Reports attest, establishment of the National Center has fostered important, ambitious, exciting, and relevant collaborations with colleagues in VA as well as with scholars and clinicians from NIH/NIMH, The Department of Defense, major academic establishments, and the international community.

It is gratifying that we have reached this milestone and have become a global leader in stress, trauma, and PTSD. I wish to thank all Center staff and friends whose creativity, vision, and commitment have made this possible.

Now I invite you to review the information on our mission, accomplishments, and future plans contained in this Annual Report. I believe it shows that we have continued to respond effectively to the needs of veterans, to the clinicians who treat them, to the scientists conducting research on PTSD, and to executives and policy makers who seek our consultation.

We have learned much during the past decade about what needs to be done and how to do it. Fortified by this experience, we look forward to the future, determined to carry out our congressionally mandated mission even more effectively and with even greater success.

Matthew Friedman, M.D., Ph.D.

A Decade of Excellence

Ten years ago the National Center for Post-Traumatic Stress Disorder (PTSD) was created within the Department of Veterans Affairs (VA), in response to a Congressional mandate to address the needs of veterans with military-related PTSD. The Center was charged with responsibility for promoting research into the causes and diagnosis of PTSD, for training health-care and related personnel in diagnosis and treatment, and for serving as an information resource for PTSD professionals across the United States and, eventually, around the world.

Scientific and clinical interest in the disorder grew exponentially during the subsequent decade. Although initially considered primarily a problem of veterans of the Vietnam War, PTSD is now recognized as a major public and behavioral health problem affecting military veterans, active-duty personnel involved in open conflicts or hazardous peacekeeping operations, and victims of disasters, accidents, and interpersonal violence in the civilian arena.

Today, the disorder is estimated to affect more than ten million Americans at some point in their lives, and many times more people around the world — representing both military personnel and civilian citizens, encompassing children and adults of all ages, reaching to locations as diverse as Columbine and Kosovo.

Looking back over the past decade, the leadership and staff of the Center are pleased and proud to have played a major role in advancing the understanding of the disorder and contributing in significant ways to the treatment of those who suffer from it. The Center's influence has been felt in many areas:

The Center has had a major influence on the entire research agenda for PTSD. Specifically, the Center has advanced the viewpoint that PTSD is a biological disorder that affects the structure, chemistry, and functioning of the brain — and that is therefore amenable to both psychological and pharmacological treatments.

The Center has helped to promote a better understanding about problems that plague both military and civilian populations — such as chronic mental illness, stress-related disorders, disaster mental health, and alcohol/substance abuse — and the relationship between traumatic stress and general problems of both medical and mental health.

The Center quickly recognized the need to communicate and promote dialogue among a wide range of constituencies: clinicians, researchers, government policy-makers, educators and scholars, veterans and their families, and the public at large. Therefore, the Center was an early proponent of the Internet as a medium of such communication, and first brought its website online in 1995.

The Center's clinical training programs have provided a unique experience for professionals involved in PTSD treatment. Many have benefited from hands-on training at the largest and most sophisticated inpatient PTSD program in the world, while many times more have benefited through the publications, seminars, and consultative activities of the Center's staff.

Even though the Center's mandate does not call for it to provide direct clinical care, the Center's research, educational, and consultation initiatives have unquestionably had a positive influence on the health and well-being of PTSD sufferers from both the veteran and non-veteran sectors. Over the years Center staff have increasingly been called upon to offer their expertise to government and private agencies nationally and internationally, and the Center has amassed the world's most comprehensive body of literature on the subject.

About the National Center

The mission of the National Center for PTSD is:

To advance the clinical care and social welfare of America's veterans through research, education, and training in the science, diagnosis, and treatment of PTSD and stress-related disorders.

At the time that the National Center was being established, a VA-wide competition was undertaken to decide on a site where the Center would be located. It was quickly determined that no single VA site could adequately serve in this role. As a result, the Center was established as a consortium of five (later expanded to seven) VA centers of excellence in PTSD, each distinguished by a particular area of expertise while also sharing common interests and concerns.



Areas of Activity

In its first decade of operation, the Center has come to be regarded as the pre-eminent clearinghouse for all information and activity related to PTSD, and is widely acclaimed for its research, education, and consultation expertise.

Research: The Center has emerged as one of the foremost PTSD research programs in the world. Through its research publications, methodological breakthroughs, development of new assessment strategies, consortium projects, and promotion of innovative and collaborative research, it is a world leader in research on trauma and its aftermath. Moreover, by integrating research programs with education and consultation activities, the Center is in the forefront of development of effective preventive strategies, cost-effective assessment and treatment protocols, and specialized training and consultation to practitioners working with PTSD.

Education: The Center's educational initiatives aim to assimilate information and coordinate communication among top scientists in the field of PTSD, and to bring that information to clinicians and policymakers both inside and outside the VA. Information is rapidly disseminated through multiple channels and can be accessed by a diverse group of users through publications, presentations, consultation, training, teleconferences, satellite broadcasts, and the Center's database and website.

Consultation: Center expertise has been sought with increasing frequency by the top leadership, policy makers, and program directors in the VA and in other government agencies and branches. The Center has also been called upon for consultation by a growing number of academic and non-governmental organizations that are dealing with PTSD as a major public health problem within the civilian community. And, since PTSD occurs in locations around the world, the Center has become a resource for the United Nations (UN) as well as many national governments, some of whom have requested help to establish similar centers of excellence in their own countries.

About This Report

This Annual Report describes the National Center's key accomplishments in FY 1999 in these three areas. A series of tables at the back of the document provide details on research grants, publications, and educational activities. Detailed reports of activities at each of the seven divisions can be obtained by contacting the individual locations directly or by visiting the Center's website at www.ncptsd.org.

In addition, this tenth Annual Report contains a summary of the major achievements of the Center during its first decade of existence — a record of accomplishment that Center staff is committed to continuing in the years and decades ahead. Looking toward the future, the Center's top priority remains the discovery and dissemination of the very best diagnostic tools and treatments for PTSD, helping people in military, veteran, and civilian populations to lead healthy, productive lives.

RESEARCH

The field of traumatic stress studies in general, and Center research programs specifically, has grown dramatically since the Center's inception in 1989. During FY 1999 the major emphasis was on projects dealing with treatments, psychobiology, behavioral science, assessment, program evaluation, and the situation of certain special populations. A complete listing of Center researchers' 127 professional publications, 114 in-press articles, and 124 scientific presentations is included in Tables 1-2.

Treatment

A number of studies during FY 1999 evaluated various types of psychotherapy as potential treatments for PTSD. The most significant of these, led by the Executive Division, was VA Cooperative Study #420, a 10-site randomized clinical trial of trauma focus group therapy for combat-related PTSD in male Vietnam veterans. The study, which is the largest PTSD treatment study ever funded by the VA, is expected to be completed in June, 2000. The Division is planning another Cooperative Study, dealing with the treatment of female veterans, and expects to submit the final proposal during FY 2000.

Several projects are investigating drug treatments, including fluoxetine, fluvoxamine, paroxetine, nefazodone, dilantin, guanfacine, and clonidine. One study is evaluating the efficacy of valproate for reducing impulsive anger, which can be a particularly disabling symptom of PTSD. Among the other research projects focusing on treatment of PTSD are the following:

- A program for treating PTSD and substance abuse in individuals with HIV.
- Cognitive-behavioral therapy for survivors of torture, stemming from either prisoner-of-war experiences or through state terrorism by oppressive governments.
- Cognitive trauma therapy for battered women with PTSD.
- Cognitive-behavioral therapy for treating PTSD due to childhood sexual abuse in adult women.

In addition to these projects which directly examine the efficacy of specific treatments, several studies have provided useful information about the monitoring and delivery of VA care. In one such effort, the Evaluation, Executive, and Education Divisions are jointly conducting a pilot study to test an instrument for monitoring clinical outcomes of patients in specialized PTSD outpatient programs.

A study by the Evaluation Division found that quality-of-care indicators that are based on data collected for administrative purposes cannot be substituted for measures of treatment

outcome that are based on indices of clinical state before and after treatment. Another study by the Evaluation Division examined data from a specialized VA treatment program as it shifted from a heterogeneous environment (including both veterans with PTSD and veterans with substance abuse problems) to a homogeneous environment (including only veterans with PTSD). Although patients appear to prefer a homogeneous environment, their rate of improvement is not affected.

In other projects, a study by the Women's Health Sciences Division provided a model of how institutional and individual characteristics relate to female veterans' access to care and to health outcomes. The Department of Defense (DoD) approved a research proposal by the Pacific Islands Division to examine the effectiveness of utilizing multiple modes of telecommunication in the assessment, diagnosis, and treatment planning for PTSD.

Psychobiology

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, and much involves neuroimaging. The Division has conducted pioneering neuroimaging studies showing a reduction in size of the hippocampus, a brain structure that plays a key role in learning and memory, and an association between this reduction and deficits in some aspects of memory. During FY 1999 the Division completed a study showing abnormal function in several brain structures (medial prefrontal cortex, right hippocampus, posterior cingulate, and motor cortex) as measured with positron emission tomography during the reading of traumatic scripts.

CAPS: A New Standard in PTSD Diagnosis

One of the first tasks facing the Center staff at its very first meeting in 1989 was deciding on priorities — that is, of all the possible issues and tasks, where to begin? Fortunately, there was quick and complete agreement that the highest priority was to develop a structured interview for assessing and diagnosing PTSD that would improve upon existing instruments and meet the needs of both clinicians and researchers.

At the time, there was no "gold standard" interview instrument specifically designed for diagnosing PTSD. The instruments that did exist had limitations, and did not fully satisfy the needs of researchers or clinicians. Among other things, they did not allow for assessment of ranges of symptom severity and did not separately evaluate the frequency and intensity of symptoms. The Center immediately assembled a development team that included researchers from many disciplines and all Divisions of the Center, and this group began to develop and field-test a new diagnostic instrument. In 1990 the Clinician Administered PTSD Scale — CAPS — was born.

CAPS is intended to be used by clinicians and researchers who have a working knowledge of traumatic stress. Questions assess 17 symptoms of PTSD, as well as eight PTSD-associated symptoms, and include items for assessing

the impact on a person's social and occupational functioning. Most important, the questions ask for an assessment of both frequency and severity of each symptom on a five-point scale, rather than simply logging whether a symptom is present or absent; this added level of measurement allows more precise diagnosis and permits evaluation of a person's situation over time.

In the years since CAPS was created, it has been shown to have high validity and reliability. CAPS has been used with thousands of patients and has become a valuable tool in both clinical and research settings.

Another imaging study found a 41% reduction in benzodiazepine receptor binding in veterans with combat-related PTSD. Re-cruitment has begun on a VA-funded project in collaboration with the Hines VAMC to examine hippocampal volume and memory in male Vietnam and Vietnam-era veterans, by studying monozygotic twins with and without PTSD.

In other work at the Clinical Neurosciences Division, data from an ongoing study show that norepinephrine, a neurotransmitter secreted by the brain in response to stress, can improve memory for neutral and traumatic stimuli. These findings support the idea that stress-related increases in this chemical at the time of a trauma contribute to over-consolidation of memory, and suggest that it may be possible to prevent PTSD from developing by blocking, or reducing, the release of norepinephrine.

Another Division project found that some of the hormonal changes observed in Vietnam veterans are present in World War II veterans. They further determined that a brain chemical known as neuropeptide-Y may protect against the adverse psychobiological impact of exposure to traumatic stress. The Division also gathered more evidence about the profound changes in the stress hormone cortisol, whose release is dysregulated in PTSD. Related work at the Education Division is examining cortisol in chronic and acute PTSD in order to better understand how and why this dysregulation occurs.

The Sleep Laboratory at the Education Division continued to study PTSD-related sleep disturbances. The Lab's work focuses on the biological underpinnings of such disturbances, particularly nightmares, and their relation to the broader neurobiology of PTSD. A recent development in the Lab is the adoption of ambulatory sleep methods that will permit unique assessments of sleep in relatively naturalistic settings. A collaborative effort between the Education and Behavioral Science Divisions is using electrophysiological methods to study the attention and concentration difficulties that are commonly seen in individuals with PTSD.

Behavioral Science

The Behavioral Science Division has been at the forefront of state-of-the-art research design and statistical approaches aimed at understanding the origins of PTSD, the nature of the disorder, and its implications for physical health and functioning. During FY 1999, the Division launched three research projects that examine health and psychological adjustment following exposure to war-zone stressors. These projects aim to identify variables related to positive adaptation among Vietnam veterans, and to identify potential influences on marital and family functioning, domestic violence, and mental health of family members.

In other projects, the Division found that:

- Although numbing is one of the major symptoms of PTSD, individuals with PTSD are capable of expressing a full range of emotion; however, they have particular difficulty expressing positive emotions, such as happiness or joy, after encountering reminders of their previous trauma.
- Veterans with PTSD experience difficulties understanding social cues or resolving conflict in interpersonal situations, and these difficulties worsen after the veterans encounter reminders of combat. In part this is because veterans with PTSD experience substantial increases in feelings of anger under these circumstances.
- Marital problems are influenced by the PTSD symptoms of both the veterans and their wives. Specific problems with communication between the partners seem to contribute to the observed marital distress.

Work by the Executive, Behavioral Science, and Women's Health Sciences Divisions has documented an association between PTSD and poor physical health. In FY 1999, specific research projects focused on identifying the particular physical health problems that are associated with PTSD and on investigating the mechanisms — such as smoking — through which PTSD affects physical health.

Assessment and Diagnosis

For the past ten years, the Center has focused its research efforts 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 has developed some of the most widely-used measures in the world. A specific focus of both the Behavioral Science and Education Divisions during FY 1999 was the continued evaluation and refinement of brief, cost-effective PTSD screening measures to be used in primary-care settings. These brief measures

will help health care providers identify and provide appropriate care for veterans who are reluctant to seek PTSD treatment from mental health services.

Other work at the Behavioral Science Division involved the development of a scale to measure the heightened guardedness and vigilance shown by many veterans with PTSD. A second measure, the Boston Assessment of Suicide Ideation Correlates, aims to improve prediction of suicide risk by including trauma-related factors not previously featured in suicide prediction models.

The Pacific Islands Division completed the evaluation of the Race-Related Stressor Scale, a measure of the relationship between race and PTSD. The Division also submitted a proposal to develop a computerized, client-administered, self-scoring measure of trauma and PTSD that will generate reports for clinicians; data for this project will be collected at the Tripler Army Medical Center.

Evaluation Research

The Evaluation Division issued the fourth report of the National Mental Health Program Performance Monitoring System, which evaluates PTSD as well as mainstream mental health care provided at each VA medical center and in each of VA's 22 Veterans Integrated Service Networks (VISNs). The system generates an annual "report card" that evaluates the performance of every VA mental health program and every VISN in access to services, quality of outpatient and inpatient care, efficiency of service delivery, and veterans' satisfaction with services.

The Division also issued the fourth report on the treatment outcomes of specialized intensive (inpatient, residential, and day hospital) PTSD programs in terms of veterans' PTSD symptoms, alcohol abuse, drug abuse, violence, and work. These data are widely used in making programmatic changes as part of VA's commitment to continuous improvement in the cost-effectiveness of service delivery. Individual monitors have been selected by the Veterans Health Administration to serve as measures for the annual performance evaluation of VA's Special Emphasis Programs for PTSD.

Special Populations

When the National Center opened in 1989, PTSD was seen by many as a problem affecting just veterans of the Vietnam War. During the past ten years, it has become apparent that PTSD can happen to any veteran, even those who are not exposed to traditional combat situations. Accordingly, research at the Center is aimed at understanding issues related to the needs of a number of specific veteran groups.

Persian Gulf War Veterans: The Center has been following two groups of veterans who served in the Persian Gulf War. In one study, led by the Women's Health Sciences Division in collaboration with the Boston VA Environmental Hazards Center, over 3,000 service members were initially assessed within five days of returning from the Gulf to the U.S. at Fort Devens, MA. These men and women have been re-contacted periodically over the intervening years to study PTSD, health complaints, and other problems. Recent results suggest that reported exposure to particular Gulf environmental hazards may contribute to the presence of a multi-symptom Gulf War illness in a manner confirmed in other cohorts. Results also suggest that certain exposures, but not all, are differentially associated with symptoms of stress.

The other longitudinal Gulf War study conducted by the Center is based at the Clinical Neurosciences Division. This project has yielded important information about memory and biological alterations associated with PTSD in Gulf War veterans. During FY 1999, work focused on stress-related alterations in memory function and reductions of hippocampal volume. This project, together with a related project involving the Behavioral Science and Education Divisions, will yield important evidence about the memory and concentration problems reported by many veterans who served in the Persian Gulf War.

Another large-scale Gulf War project was initiated during FY 1999 by the Behavioral Science and Women's Health Sciences Divisions. Funded by a DoD/VA collaborative program, this three-year endeavor seeks to develop a psychosocial risk and resilience inventory as a prototype instrument for use in future military deployments.

Women Veterans: Nearly all Divisions have one or more projects of relevance to women veterans, but most of the research that focuses on women specifically is conducted at the Women's Health Sciences Division. During FY 1999, the Division analyzed data from a study of 1,500 women in a nationally-representative sample of VA users, former users, and non-users. Results showed that the population of women veterans is changing markedly as roles of women in the military change. Further, women veterans overall and VA users in particular report a number of trauma-related military experiences not previously documented empirically.

Another project, funded by Health Services Research & Development (HSR&D) and under the guidance of the Women's Health Sciences Division, focuses on employees' gender awareness in VA health care. During FY 1999, information was gathered from all levels of VA staff in the New England VISN. The core concepts under study are

gender ideology, or beliefs about the proper roles of men and women, gender sensitivity in the delivery of care, and knowledge of health-care programs and services available especially to women veterans. The product will be a gender awareness assessment inventory for organizational monitoring throughout the VHA.

Active-Duty Personnel: During FY 1999, the Clinical Neurosciences Division completed several projects to evaluate the impact of uncontrollable stress, working with colleagues at the JFK Special Warfare Training Center at Fort Bragg, NC, and other DoD organizations. Special Warfare training is a useful model for studying response to uncontrollable stress, because it results in biological and psychological responses that are comparable to those associated with the life-threatening events known to cause PTSD.

The Behavioral Science Division also examined the psychological consequences of peacekeeping and peace-enforcement missions for combat-trained US military personnel who served in Somalia, Bosnia, and Kosovo. Recent findings from the personnel in Bosnia show that the particular frustrations and demands associated with peacekeeping duties — such as witnessing the suffering of children and seeing the aftermath of violence — are among the strongest predictors of long-term stress symptoms.

The Women's Health Sciences Division entered its third year of the DoD-funded research on women in the Marine Corps and their adaptation to first-term enlistment. Preliminary results suggest that pre-military trauma, although more prevalent in these military women than it is among civilians, has little impact on attrition during boot camp. Ongoing analyses are examining what predictors have the greatest influence over time. The investigation is aimed at informing policy makers and clinicians concerned with improving retention of Marine Corps women, as well as



optimizing their adaptation to military service.

Education

An important aspect of the Center's mission is the dissemination of information on PTSD research results, diagnostic approaches, and treatment options to the constituencies who need it, from lay persons to PTSD specialists. This education function utilizes formats ranging from printed materials to electronic delivery to face-to-face workshops and traineeships.

Research and Clinical Publications

In addition to the numerous scholarly publications, books, and chapters Center staff generate in connection with their own research activities, the Center publishes its own material to support the VA's educational mission. The two major publications are:

- The *PTSD Research Quarterly*, a guide to the scientific literature on traumatic stress and PTSD.
- The *National Center for PTSD Clinical Quarterly*, which addresses the needs of practicing clinicians and program administrators.

In FY 1999, the *Research Quarterly* included articles on Eye Movement Desensitization and Reprocessing, delivery of PTSD services by the VA, and exposure therapy, along with a retrospective article on the Center's first ten years. *Clinical Quarterly* issues included articles on differentiation of malingering from PTSD, treatment of patients with PTSD and psychotic symptoms, cognitive-behavioral therapy for PTSD and substance abuse, management of dissociative symptoms, clinical application of diagnostic instruments, motivation enhancement group therapy, partial hospitalization program for PTSD and substance abuse, the psychophysiology of PTSD, and resilience and vulnerability factors in the course of adaptation to trauma.

The Center also produces state-of-the-art tools aimed at clinicians involved in the treatment of people with PTSD. In FY 1999, the Education Division produced *Incarcerated Veterans Forensic Outreach Training Manual*, designed for VA mental health workers who want to increase their ability to reach incarcerated veterans who suffer from PTSD. In collaboration with the Executive and Behavioral Science Divisions, it also published *Peacekeepers: A Military Mental Health Practitioner's Guidebook*, which applies the principles of disaster mental health for practitioners working with active-duty military peacekeepers.

Education Division staff also developed materials designed to enhance the ability of medical practitioners to deliver a brief educational intervention following illness or injury, and to help paraprofessional rape crisis counselors assist survivors of sexual assault during the acute phase of recovery. The Center has also produced numerous videos, most recently including programs on PTSD and anger and on the VA's role in disaster mental health.

In FY 1999, the Center, in collaboration with the National Center for American Indian and Alaska Native Mental Health, completed production of a series of four videotapes and two manuals entitled, "Wounded Spirits, Ailing Hearts: PTSD and the Legacy of War Among American Indian and Alaska Native Veterans." Each of the four videotapes is tailored to a specific audience — American Indian and Alaska Natives, mental health providers, primary care providers, and the general public — and the two manuals target lay audiences and health care providers. An independent study course is also available for health-care professionals. The Center is currently collaborating with VA Learning University on a CD-ROM that will train VA clinicians how to use the CAPS assessment instrument.

Training Programs and Workshops

The Center is a leading provider of training programs and workshops that help professionals prepare to work with PTSD, and that provide professionals and others with opportunities to interact, learn, and exchange ideas.

Specialized Training Programs: The Education Division's Clinical Training Program is recognized as one of the nation's top training programs for the treatment of PTSD. In FY 1999, 87 clinicians, drawn from 25 states and three foreign countries and representing all major helping disciplines, attended the program.

Internships and Fellowships: All divisions offered a variety of traineeships to men and women enrolled in post-graduate programs in preparation for careers as professionals in psychiatry, psychology, social work, nursing, and other disciplines.

Workshops and Presentations : During FY 1999, Center investigators presented a total of 53 workshops, training sessions, and papers in a number of educational settings, with major emphasis on disaster and critical incident debriefing, special needs of women veterans, and the role of PTSD in primary care.

The Center initiated and coordinated a VA PTSD Primary Care "Summit Meeting" with the VA Mental Health Strategic Health Group and Office of Ambulatory Care and the Institute for Behavioral Healthcare/Centralink. Participants had the opportunity to discuss innovative approaches to integrating PTSD screening, assessment, and treatment of mental health services in primary care settings.

Together with the Center for Drug Abuse Research at Howard University and the School of Medicine at Indiana University, the Center acted as co-sponsor for the Fourth African-American Conference on PTSD. This conference was designed to address the issue of violence in the urban black community, drawing in part upon lessons learned from treatment of combat-related PTSD. Education Division staff also delivered a two-day workshop on assessment and treatment of PTSD in male and female veterans for the Black Hills Health Care System at VA Fort Meade in South Dakota. The Education Division collaborated with the Readjustment Counseling Service (RCS) to provide stress management training for the Office of the Inspector General.

Education Division staff made a presentation on disaster mental health to the Fourteenth Annual Uniformed Services Social Work Conference in San Diego. Division staff also provided a training workshop for the Madigan Army Medical Center SMART Team, a group that is responsible for providing mental health assessment and care in the event of chemical or biological disasters. Additionally, Education Division staff provided workshops for California disaster assistance workers at both the county and state levels.

Teleconferencing: In addition to face-to-face programs and workshops, the Center has also begun to take advantage of teleconferencing and multi-site conference calls as a cost-effective way of delivering educational presentations.

Part of the Center's role in disaster mental health is improving VA response. Toward this end, the Education Division partnered with RCS and the Emergency Management Strategic Healthcare Group (EMSHG) to launch a system of monthly nationwide teleconference calls focusing on management of crisis. Participants are VA personnel who have received National Center disaster mental health training. Speakers have included representatives from the American Red Cross, California Department of Mental Health, VA Central Office, RCS, Mental Health Strategic Healthcare Group (MSHSG), and a private practitioner who was involved in the response to the Columbine High School shooting.

The Education Division collaborates with the Evaluation Division to produce an ongoing series of educational telephone conference calls aimed at practitioners at all VA specialized PTSD treatment programs across the nation. During FY 1999, five such calls were delivered, covering topics that included PTSD/substance abuse treatment, spiritual healing, and new treatments for veterans with combat-related PTSD.

PILOTS and the Website: Spreading the Word

At the time the National Center for PTSD was established, simply finding information about traumatic stress was a problem for researchers and clinicians. Because of the multidisciplinary nature of PTSD, relevant information could be found in literature from a variety of fields — medicine, sociology, psychology, criminology, law, and others. Moreover, there was no controlled vocabulary that was useful for conducting searches through this interdisciplinary wealth of literature.

Creation of a bibliographical database to index the traumatic stress literature therefore became one of the first projects of the fledgling Center. The database was established as "Published International Literature on Traumatic Stress," or PILOTS, and made available online in 1991. At the same time, Center staff decided to create its own indexing vocabulary to replace the cumbersome and imprecise terminology that was in use at the time, and the PILOTS Thesaurus was published in a Users Guide that was released later that same year.

The Center was quick to take advantage of its association with Dartmouth College, an early pioneer in computing. By placing the PILOTS database on the Dartmouth College Library Online System, users around the world were able to access the database free of charge. The Center also was among the first organizations to recognize the power of the emerging technology of the Internet. The Center's website, incorporating not just PILOTS but also information of interest and use to a more general audience, was launched in 1995.

From 1,950 records in PILOTS at the time of its launch, the database has grown nearly tenfold to a total of well over 16,000 articles, books, dissertations, theses, technical reports, and pamphlets. The database and website are accessed by thousands of users annually, and the Center today is regarded as one of the leading sources for reliable information on PTSD.

Resource Center

The PTSD Resource Center houses the largest single collection of traumatic stress literature in the world, a comprehensive collection that includes some 12,000 articles and 1,100 books, plus videos, journals, treatment manuals, and academic papers. The Center's online database — Published International Literature On Traumatic Stress — is highly acclaimed, and nearly 18,000 connections were made to PILOTS during FY 1999.

The Center's website (www.ncptsd.org) includes access to PILOTS, several fact sheets for the lay public, links to relevant trauma sites, and articles from the *Clinical Quarterly* and *Research Quarterly*. In FY 1999, the Center proceeded with a major multi-division effort to update and expand information available on the website, with the objective of making the website the flagship location for authoritative information on trauma, PTSD, and traumatic stress.

CONSULTATION

Consultation continued to play a prominent role in Center activity during FY 1999, and included interactions with a host of individual clinicians, researchers, administrators, policy makers, teachers, students, and journalists, as well as veterans and their family members. Center staff are consulted daily on matters of policy, treatment, and research by people from all over the world, and many staff members share their expertise through participation on high-level boards, panels, and committees.

Policy

The Center works closely on an ongoing basis with agencies from all branches of government, inside and outside the VA, to help set clinical, research, and educational policy. Within the VA these consultative activities include relationships with RCS, the Medical Research Service, and the offices for Women Veterans, Emergency Preparedness, Gulf War Veterans, and Minority Veterans. The Evaluation Division works with the Under Secretary for Health's Special Committee on PTSD regarding planning and program development issues. Outside the VA, these activities include relationships with DoD, the National Institutes of Health (NIH), Federal Emergency Management Agency, the State Departments, and others.

During the past year, Center staff were extensively involved in international, national, VISN, and local committees. Some examples include:

Within VA, Drs. Jessica Wolfe and Dennis Charney served on the VA Medical Research Advisory Board for Mental Health; Dr. Terence Keane co-chaired and Dr. Matthew Friedman served on the VA New Knowledge Committee for Mental Health; Drs. Keane and Friedman served on the Headquarters Mental Health Field Advisory Board; and Dr. Marie Caulfield served on the VA Task Force on Sexual Harassment.

Dr. Keane was a member of the Behavioral and Social Sciences Working Group of the NIH. Dr. Charney served on several strategic planning committees for extramural research at the National Institute of Mental Health (NIMH) and

on the Board of Scientific Counselors for the NIMH intramural research program.

Dr. Keane served on the Council of Representatives of the American Psychological Association (APA), and Dr. Sarah Miyahira was elected President of the Ethnic Minority Psychologists' section of APA's Clinical Psychology Division.

A key event during FY 1999 was the participation of the Executive, Education, Evaluation, and Women's Health Sciences divisions in the White House Conference on Mental Health. The meeting, organized by Tipper Gore, wife of the Vice-President, invited professionals from around the country to promote White House policy on mental health and the delivery of services for mental health problems.

Another key event was the participation of Dr. Matthew Friedman in hearings regarding the development of a National Center for War-Related Illness. During these hearings, Dr. Friedman was asked to draw upon his ten years of experience as Executive Director of the Center to recommend guidelines that would enable this new agency to carry out its mission in the most efficient and cost-effective manner.

Treatment

Center staff routinely consult on matters related to the assessment and treatment of PTSD, with activities that range from advising clinicians on specific individual cases to providing officials with information needed to prepare for testimony before Congress. During FY 1999, examples of significant consultative activities on treatment included the following:

In collaboration with the International Society for Traumatic Stress Studies (ISTSS), the Center has helped to coordinate an international effort to develop empirically-based "best practice" guidelines for PTSD treatments. During FY 1999 Dr. Edna Foa of the University of Pennsylvania, along with Co-Chairs Drs. Keane and Friedman, finalized the guidelines for presentation at the ISTSS annual meeting in November, 1999, and for publication in a forthcoming book.

The Education Division, in collaboration with VA's MSHSG, provided post-assignment support to VA volunteers deployed to care for Kosovar refugees who were relocated to Fort Dix, NJ. In the aftermath of Hurricane Floyd, Division staff also organized stand-by alert status of VA disaster mental health personnel.

Consultation to the DoD: Helping the Veterans of Tomorrow

Since its inception, the Center has provided staff in consultative roles to assist governmental and non-governmental agencies, educational institutions, researchers, and clinicians throughout the U.S. and around the world. One of the most productive and rewarding of these relationships has been the ongoing consultative relationship with the Department of Defense, which began in 1991 with Operation Desert Storm.

The conflict in the Persian Gulf in 1991 led to the massive deployment of troops in that area, with worst-case scenarios predicting the possibility of tens of thousands of medical evacuees. The challenge to the VA was to prepare 80 hospitals to receive up to 25,000 patients within 72 hours of the outbreak of hostilities. The Center was called in to provide staff on a consulting basis, advising military and medical personnel on combat stress reactions, clinical approaches, intervention strategies, pharmacological approaches, and more.

Center staff from all around the country immediately came together to design and implement two large-scale training conferences; they also quickly developed, printed, and distributed an Operation Desert Storm Clinical Packet, containing articles and information that would be of use to clinicians involved in direct patient care. The number of casualties did not come close to those early worst-case scenarios, but the need and usefulness of the Center was demonstrated in dramatic fashion.

The relationship to the DoD that began at this moment of crisis has continued in the subsequent decade, spawning a number of research and education projects in addition to regular ongoing consultation. One especially interesting example is an unprecedented longitudinal study of some 3,000 Gulf War veterans that began within five days of their return to the U.S. This activity, and others like it, give the Center the opportunity to have a significant impact on the health and well-being of the veterans of today and, of equal importance, the veterans of tomorrow as well.

Dr. Paula Schnurr is part of the Millennium Rainbow Task Force formed to support the development of programs that integrate mental health, primary care, and geriatric programs.

Dr. Friedman provided ongoing consultation to national leadership of the American Legion, Vietnam Veterans of America, and a consortium of Veterans Service Organizations regarding preparation of the *Initiative for Veterans Mental Health Services*, a report aimed at improving the treatment of veterans nationwide.

Research

Consultation to research teams is also a routine part of Center activity. Some of these consultations result in formal

roles as consultants or co-investigators on grants and, although such grants are not tabulated as specific Center accomplishments, they represent a vital contribution by the Center to the body of knowledge about trauma and PTSD.

Many Center staff serve as reviewers for grants submitted to VA, NIH, and other agencies; some, including Dr. Steven Southwick (VA Merit Review), Dr. Friedman (NIH), and Dr. John Krystal (National Institute on Alcohol Abuse and Alcoholism), also serve as regular or special members of review committees. Many Center staff also serve as reviewers or editors for journals, or on editorial boards. Dr. Danny Kaloupek served as the PTSD specialist on a site visit organized by VA Research Service to VA Puget Sound Healthcare System.

The National Center provided research consultation on PTSD to several patient advocacy groups. Drs. Friedman, Charney, and Robert Rosenheck presented research on PTSD as a serious mental illness at the annual meeting of the National Alliance for the Mentally Ill. Dr. Charney also served on the Scientific Advisory Boards for the National Depression and Manic Depression Association, Anxiety Disorder Association of America, and the National Association for Research in Schizophrenia and Depression.

The Center continued its consultation to DoD regarding trauma and PTSD. Dr. Brett Litz consulted with the Medical Research Unit of the Walter Reed Army Institute of Research on evaluation and treatment of personnel returning from the Kosovo peacekeeping mission, and with the Operational Stress Research branch in the Department of Neuropsychiatry on other issues.

International

Evidence of the Center's reputation as a world leader in knowledge about PTSD is provided by the numerous requests from individuals and organizations around the world for information about trauma and PTSD. These requests involve both research and clinical issues, and, as with requests from colleagues in the U.S., range from informal advice to a clinician to formal, programmatic relationships.

During FY 1999, Dr. Friedman was asked to take part in the White House delegation to investigate and report on the psychological needs of the population in Kosovo. Dr. Friedman also is part of an initiative led by Dartmouth Medical School to advise educators in Kosovo on the rebuilding of the medical school there. He and staff from the Education Division have consulted to mental health personnel in that country on issues related to PTSD treatment, and, through ISTSS, are working to assist in the development of formal PTSD treatment programs there.

One source of international contacts comes from participation in the leadership of the ISTSS; Drs. Friedman and Keane are past Presidents, Drs. Kaloupek and Southwick are current members of the Board of Directors, and several staff members have served on the Board in past years. Since FY 1998, Drs. Friedman and Keane have co-chaired an ISTSS task force, convened at the request of the UN, to develop a strategic plan through which the UN can address trauma-related psychological distress and emotional needs of survivors of humanitarian crises, victims of social inequality and oppression, and UN personnel who have been deployed to assist these individuals.

The Center provided support to several countries regarding the development of PTSD programs for military veterans. The Executive Division continued to consult on the development of PTSD treatment programs to VA Canada, the Canadian Department of National Defense, and the Royal Canadian Legion. The Education Division consulted with the British Ex-Services Mental Welfare Society, and there is an ongoing relationship between the Center and the Australian National Centre for War-Related PTSD.

In other international efforts, Dr. Litz consulted to professionals from New Zealand concerning research on mental health outcomes in New Zealand peacekeepers. The Education Division consulted to public health officials in Bogota, Columbia; Ankara, Turkey; and Taiwan following the recent natural disasters in those countries. That Division, along with the Executive Division, also consulted to the Hyogo Prefecture in Kobe, Japan, regarding the development of PTSD programs there.

TOWARD THE FUTURE

During its first decade, the National Center's conceptual framework has changed considerably, based on an emerging understanding of basic mechanisms that underlie stress and PTSD. Thus, the traditional disease model, which catalogued symptoms and documented abnormalities, has given way to a proactive approach that emphasizes prevention and early intervention strategies. Center activity has also shifted from an exclusive focus on Vietnam veterans to veterans from all eras — including the veterans of tomorrow who are currently stationed in the Balkans.

Many of the priorities that are important today were barely perceptible when the Center opened its doors in 1989. New areas have evolved gradually in response to a variety of developments: our emerging understanding of basic mechanisms that underlie stress and PTSD; the growing importance of younger veterans of UN/North Atlantic Treaty

Organization peacekeeping operations; the increase in women joining the military and seeking VA care; the movement of primary care to center stage in VA (and US) medicine; and VA's commitment to participate in the National Disaster Medical System.

Thus, while the Center has remained pre-eminent nationally and internationally in research and education on PTSD, the Center has also reached out beyond its traditional base in VA Mental Health to form new collaborations. These include:

Primary Care: to promote more effective clinical collaboration between primary care and mental health practitioners.

Department of Defense: to develop effective interventions to ameliorate the adverse impact of severe stress on the veterans of tomorrow.

National Disaster Medical System: to develop the most effective approaches for mental health disaster workers in the future.

In the midst of all these changes, however, the organization's focus on its primary mission — improving treatment for veterans — has remained constant. Research that expands our understanding of PTSD, that provides better tools for clinicians, or that leads to the development of better treatments all serve that purpose. Program evaluation that enables clinical directors and policy makers to improve PTSD services also supports that objective. Finally, educational initiatives that enhance the skills of clinicians and expand the public's understanding about PTSD should promote better care for veterans with PTSD.

In short, we enter the twenty-first century determined to maximize the reach and impact of the Center's existing resources to improve the prevention and treatment of PTSD. We aim to accomplish this goal through targeted Center research, expanded dissemination of Center knowledge and tools, and the broadest possible application of this knowledge to people throughout the world.

The First Decade: Some Key Milestones

1989 William Derwinski, Secretary of Veterans Affairs, dedicates National Center for PTSD

First Center meeting launches development of Clinician Administered PTSD Scale, or CAPS

Disaster Mental Health program begins with response to earthquake in Loma Prieta, CA

1990 First issue of *PTSD Research Quarterly* is published

First issue of *NCP Clinical Newsletter* (now *NCP Clinical Quarterly*) is published

Education Division begins on-site Clinical Training Program

Center staff participate in first VA/DoD training conference to prepare for casualties from Operation Desert Storm

1991 PILOTS database becomes publicly available

Evaluation Division launches first national survey of VA PTSD inpatient programs

1992 Behavioral Science Division completes data collection for first VA Cooperative Study on PTSD

Education Division supports development of VA's first PTSD inpatient program for female veterans

1993 Women's Health Sciences Division is established

Scientific Institute on Ethnocultural Aspects of PTSD is co-sponsored with NIMH

Pacific Islands Division is formed from Pacific Center research program

1994. National training conference on African-American veterans and PTSD is co-sponsored with Readjustment Counseling Service (RCS)

Work continues on three longitudinal projects to study health and well-being of Gulf War veterans

1995. Clinical Neurosciences Division reports that a part of the brain involved in learning and memory is

reduced in Vietnam veterans with PTSD

Website becomes available

Center co-sponsors, with NIMH, Consensus Conference on PTSD Assessment

1996. Findings on Congressionally-mandated study of PTSD in Native American and Asian-American

Vietnam veterans are presented to Secretary Jesse Brown

Women's Health Sciences Division completes national survey of women veterans' perceptions of VA health care

1997 VA Cooperative Study #420, the largest PTSD psychotherapy study ever conducted, kicks off

Education Division completes VA Disaster Mental Health Manual

Evaluation Division develops National Mental Health Performance Monitoring System for evaluating VA mental health programs

1998 National Disaster Mental Health Training Series is launched, in collaboration with RCS

Center contributes to project, in response to Presidential Research Directive, to advance programs promoting health and well-being of active-duty military personnel

Center plays a major role in two ISTSS projects: one to develop empirically-based Practice Guidelines for PTSD, and another to create a plan to address global impact of trauma for the UN

1999 Center participates in White House Conference on Mental Health

Along with VA Headquarters, Center coordinates VA PTSD/Primary Care Summit

National Center for PTSD celebrates 10 years in operation

Research Activities at the National Center's Seven Divisions

The National Center for PTSD is composed of seven divisions located at VA facilities around the United States. Each of the sites is deeply engaged in research activities in its own area of specialization, as well as providing educational and consultation services to professionals involved in the diagnosis and treatment of PTSD in veteran, military, and non-military settings. Center researchers are in the forefront of investigation into the causes, effects, and treatments of PTSD; some of the more notable efforts that were underway during FY 1999 at the individual sites are discussed below.

[Executive Division:](#)

Strategic Planning, overall organization, website, bibliographic projects.

[Behavioral Sciences Division:](#)

Assessment, treatment, family, information processing, and psychophysiological research.

[Women's Health Sciences Division:](#)

Assessment, treatment, sexual assault, early screening, and health issues for women with PTSD.

[Clinical Neurosciences Division:](#)

Neuroscientific studies, brain function and biological approaches for diagnosis and treatment of PTSD.

[Northeast Program Evaluation Center:](#)

Evaluation and Monitoring of all VA PTSD treatment programs.

[Clinical Laboratory and Education Division:](#)

Research and educational activities on the treatment of PTSD.

[Pacific Islands Division:](#)

Cross-cultural factors affecting PTSD, treatment outcome, and service delivery in remote geographical areas.

Executive Division

The Executive Division of the National Center, headed by Dr. Matthew Friedman, is responsible for overall direction and planning for the entire Center. Located at the VA Medical Center in White River Junction, VT, this Division also houses the National PTSD Resource Center and manages the PILOTS (Published International Literature on Traumatic Stress) database, which disseminates information all over the world. Division staff are also frequently called upon for high-level consultations to agencies and governments around the world.

The primary focus of research activity at the Executive Division during FY 1999 was the evaluation of treatments for PTSD. Drs. Matthew Friedman and Paula Schnurr continued work on VA Cooperative Study #420, a randomized clinical trial comparing trauma-focused group therapy and present-centered group therapy for treating PTSD in male Vietnam combat veterans. Data collection is scheduled to be completed by June, 2000. Following on the success of this study, Drs. Schnurr and Friedman received approval to submit a full proposal to the VA Cooperative Studies Program for funds to conduct a randomized clinical trial of Prolonged Exposure with female veterans and military personnel with PTSD.

Dr. Friedman, along with Drs. Annmarie McDonagh-Coyle and Greg McHugo, completed their NIMH-funded randomized clinical trial of a cognitive-behavioral treatment for women with PTSD who had been sexually abused in childhood. Analyses are underway and the results of the study should be available in FY 2000.

In collaboration with the New Hampshire-Dartmouth Psychiatric Research Center, the National Center has been involved in a pilot study to examine the feasibility and validity of treating PTSD in people with severe mental illness. In the coming year, Division researchers plan to pilot this treatment with male veterans who have PTSD and a comorbid psychotic disorder.

Two studies investigated aspects of the biology of PTSD. In the first, Drs. Friedman and Schnurr are collaborating with Dr. Peter Morganelli in a study to examine differences in stress hormone levels in Vietnam combat veterans. The study focuses on a particular protein molecule, CD163, a marker that is regulated by the stress hormone cortisol. The second of the biology-related studies, conducted by Dr. Monica Descamps with Drs. Friedman and Schnurr, is a pilot study that compares male combat veterans with and without PTSD on physiological reactivity to trauma- and nontrauma-related stressful tasks in the laboratory. The long-term goal of this research is to develop better understanding of the correspondence between psychological and psychophysiological reactions in PTSD.

Other studies examined PTSD as a risk factor for poor physical health. Dr. Schnurr continued her collaboration with Dr. Ron Spiro at the VA Normative Aging Study to investigate how PTSD relates to physical health in World War II and Korean conflict veterans. Dr. Nancy Bernardy submitted a proposal to conduct an examination of nicotine withdrawal symptoms in male combat veterans who are smokers with PTSD and in a comparison group of male veteran smokers without PTSD. The goal of the research is to study how stress, anxiety, and PTSD symptoms relate to smoking in combat veterans.

Finally, two studies at the Executive Division are exploring risk factors for PTSD and other outcomes associated with traumatization. Dr. Schnurr began a new VA Merit Review grant to study predictive factors related to the chronicity of PTSD. Dr. Patricia Watson is collaborating with the Office of Officer Education of the US Navy to analyze data on all incoming naval recruits between 1990 and 1999. The study will examine how a history of trauma relates to health and performance during active duty.

Behavioral Science Division

The Behavioral Science Division, directed by Dr. Terence Keane and headquartered at the VA Medical Center in Boston, MA, is involved in the areas of assessment, psychotherapy, psychophysiology, and information processing. The Division is especially known for research involving the development and refinement of measures for trauma and PTSD. Several of these measures are playing an increasingly important role in both research and clinical practice; some, including the Clinician Administered PTSD Scale (CAPS) and the Mississippi Scale, have been adopted as the "gold standard" instruments for assessment and diagnosis.

Division Director Dr. Terence Keane continued his work on improving methods for evaluating and treating people with PTSD with two key efforts. During the year he launched a funded project aimed at treating PTSD and substance abuse in individuals additionally burdened by HIV infection. A second, large-scale study tests a state-of-the-art treatment protocol developed specifically for individuals who have been traumatized through torture, either as a result of being a

prisoner-of-war or through government-sanctioned torture.

During FY 1999, Dr. Danny Kaloupek, collaborating with Dr. Steven Woodward of the Education Division, prepared to launch a project to examine the association between PTSD and the size of a brain area called the hippocampus, which has been shown to be adversely affected by stress. The methods used to examine this question include brain scanning with Magnetic Resonance Imaging (MRI), brain wave measurement, collection of a stress hormone, and measurement of heart rate and other physiological indicators of stress and emotion. A key question is whether previous findings of smaller hippocampus size among individuals with PTSD can be repeated, and whether smaller size is associated with poorer memory performance on certain kinds of tasks. The study draws participants from both Vietnam and Gulf War cohorts, thereby allowing examination of questions of specific relevance to each, such as the memory and concentration problems reported by many Gulf War veterans.

Dr. Brett Litz has continued to study the conditions under which people with PTSD have difficulty experiencing and expressing emotional feelings. A recent study showed that individuals with PTSD are capable of expressing a full range of emotion, but they have particular difficulty expressing positive emotions, such as happiness or joy, after encountering reminders of their previous trauma.

Dr. Litz also has been examining the psychological consequences of peacekeeping and peace-enforcement missions for combat-trained US military personnel who served in Somalia, Bosnia, and Kosovo. Recent findings from the personnel in Bosnia show that particular frustrations and demands associated with peacekeeping duties (e.g., witnessing children suffering and seeing the aftermath of violence) are among the strongest predictors of long-term stress symptoms.

Dr. Daniel King, along with Dr. Lynda King of the Women's Health Sciences Division, published their final study in a series that examined how premilitary, war-zone, and postmilitary factors relate to the severity of PTSD symptoms in Vietnam veterans. The Kings also launched three research projects examining health and psychological adjustment following exposure to war-zone stressors. One goal of this work is to identify variables related to positive adaptation among Vietnam veterans. Another is to identify potential influences on marital and family functioning, domestic violence, and mental health of spouses and children.

The interpersonal consequences of trauma and PTSD are the focus of Dr. David Riggs. Recent findings show that veterans with PTSD experience difficulties understanding social cues or resolving conflict in interpersonal situations. These difficulties get worse after the veterans encounter reminders of combat, in part because veterans with PTSD experience substantial increases in feelings of anger under these circumstances. Research on the marital relationships of male Vietnam veterans with PTSD indicates that marital problems are influenced by the PTSD symptoms of both the veterans and their wives. Specific PTSD-related problems with communication between the partners seem to contribute to the observed marital distress.

Brain waves, are being used by Dr. Matthew Kimble to study difficulties with attention and concentration, which are among the most common complaints of individuals with PTSD and include both excessive attention to potentially threatening cues and difficulty sustaining attention on tasks. One study is designed to test how both the emotional state of the individual and the nature of the task influence attention in PTSD; predictions point to the disruptive effects of both acute emotional distress and tasks that include trauma reminders. A second study examines brothers of male veterans with and without PTSD to determine whether attention problems are more strongly associated with familial factors (genes or shared family background) or with non-shared environmental factors (such as exposure to combat).

Projects aimed at screening primary care patients for mental health problems including PTSD are the focus of Dr. Barbara Niles. Along with colleagues in the local Medical Psychology program, she developed a screening measure and conducted a study of 313 primary care patients to examine the prevalence of PTSD and associated psychiatric disorders, as well as the extent of unhealthy lifestyle behaviors (e.g., smoking, high-fat diet, and lack of physical exercise). Findings suggest that patients with PTSD have a higher prevalence of chronic pain and engage in more unhealthy lifestyle behaviors than those patients without PTSD.

Dr. Lisa Fisher is active in research on the treatment of PTSD. In addition to participating in VA Cooperative Study #420 headed by Drs. Friedman and Schnurr of the Executive Division, she continues to coordinate the development of protocols and the collection of outcome data for local treatment programs operating in the PTSD Clinics at the VA Boston Healthcare System. She and her colleagues have presented workshops on these protocols and treatment procedures at national and international conferences this year.

Dr. Jeffrey Knight was involved in two collaborative projects aimed at development of measures related to trauma and PTSD. The first of these, the Hypervigilance Scale, is designed to measure the heightened guardedness and vigilance shown by many veterans with PTSD. Initial evidence shows that the scale is a useful and valid instrument; plans are

currently underway to see if scores on this scale change, as expected, when PTSD treatment is successful. The second measure, the Boston Assessment of Suicide Ideation Correlates, aims to improve prediction of suicide risk by including trauma-related factors not previously featured in suicide prediction models. An initial investigation with the measure is examining combat veterans who have frequent thoughts about suicide.

Dr. Todd Buckley, who recently joined the staff from the University of Mississippi Medical Center, has designed a study to examine PTSD as a risk factor for cardiovascular problems such as hypertension. The study seeks to examine the relationships among PTSD, health behaviors, and physical fitness level and to determine how they might play a role in both adaptation to stress and cardiovascular functioning.

Clinical Neurosciences Division

The Clinical Neurosciences Division, under the direction of Dr. Dennis Charney, is one of the few sites in the world dedicated to investigating the biological and neuropsychological consequences of severe stress. Located in West Haven, CT, the Division's programs are often integrated with research programs at the West Haven VA and at the Yale Department of Psychiatry to provide multidisciplinary perspectives.

Dr. Steven Southwick continues to lead a team of researchers who are studying the psychological and neurobiological consequences of the Gulf War. The team is assessing the evolution of trauma-related symptoms over time, as well as possible stress-related alterations in memory function and hippocampal volume. Dr. Southwick and his colleagues have also gathered preliminary evidence suggesting that norepinephrine can improve memory in healthy subjects — and that stress-related increases in norepinephrine at the time of a trauma therefore might contribute to over-consolidation of memory, with resulting re-experiencing symptoms. The team is also conducting trials of several drugs, including clonidine and guanfacine, that appear to be good candidates to help patients with symptoms of hyperarousal and re-experiencing.

Under the direction of Dr. Robert Innis, a major thrust of developmental work within the Laboratory of Neuroimaging has involved the use of Positron Emission Tomography (PET), which allows researchers to safely study the chemistry in the living human brain. During FY 1999 this technology was used to implement reliable syntheses for two tracers of the serotonin system. One tracer labels a serotonin receptor subtype (1A) which is highly concentrated in the hippocampus, and which is significantly decreased by stress. Over the coming year, this tracer will be studied in patients with PTSD.

Dr. Deborah Lipschitz continued her adolescent trauma work with inpatients at Yale Psychiatric Institute. Preliminary results of one study with the adolescent group show that, compared to both traumatized adolescents and healthy controls, traumatized adolescents with PTSD do not have significantly exaggerated salivary cortisol response to low-dose dexamethasone. Two additional projects are being conducted by Dr. Lipschitz in collaboration with Dr. Ann Rasmusson and Yale-New Haven Hospital pediatrician Dr. Walter Anyan. One is an examination of the functional and academic impact of PTSD and partial PTSD in urban, inner-city adolescent girls; another will look at the course and severity of PTSD symptoms and substance use over a one-year period in this inner-city population.

During FY 1999, Dr. C. A. Morgan and colleagues, working with the JFK Special Warfare Training Center and other DoD organizations, completed several projects on the impact of uncontrollable stress. US Army Special Forces soldiers, compared to general troop soldiers, demonstrated significantly greater plasma neuropeptide Y (NPY) and NE release during stress, less cortisol release, and more rapid recovery to baseline after the conclusion of stress. Psychological symptoms of dissociation were significantly less in the Special Forces soldiers and were negatively correlated to NPY release.

Drs. John Mason and Sheila Wang in the Laboratory of Neuroendocrinology continued to investigate multidimensional hormonal profiles in different populations of PTSD patients. A study of World War II combat veterans replicated earlier findings of elevated T3 thyroid in Vietnam combat veterans, including a significant relationship between T3 measures and PTSD symptoms, hyperarousal in particular. Preliminary data from traumatized women indicate abnormally elevated thyroid function among 25% of the subjects.

Drs. Morgan and Wang continued to study the relationship between biological and psychological/performance variables in high-intensity military training at several sites. The laboratory also continued to analyze multidimensional hormonal profiles in two specific studies: a large sample of female child sexual abuse survivors, in collaboration with the Executive Division; and an ambulatory monitoring study with combat veterans, in collaboration with the Education and Clinical Laboratory Division.

During the past year Dr. Ann Rasmusson has completed a study of HPA axis regulation in premenopausal women with PTSD and found that PTSD subjects have significantly higher ACTH and cortisol responses to CRF stimulation than

healthy nontraumatized controls. The data suggest that dysregulation of these stress hormones may contribute to co-alterations in memory and other PTSD symptoms; the Women's Health Sciences Division is now collaborating on an expanded version of this study.

Dr. Rasmusson has also investigated the incidence of low baseline plasma NPY, a condition which is thought to promote more rapid triggering of the fight-or-flight response. As has been shown in prior studies of men, women with chronic PTSD and trauma controls have decreased plasma NPY levels compared to nontraumatized age-matched controls. Dr. Rasmusson has also found preliminary evidence for brain abnormalities in frontal lobe function among men with combat-related PTSD; this study is being expanded to include combat and substance abuse controls.

In the laboratories of Neuropharmacology and Neurophysiology, Drs. Christian Grillon and Morgan have focused their research studies on the psychophysiology of fear, anxiety, and trauma-related disorders. Studies have assessed fear acquisition and fear inhibition through the use of the acoustic startle reflex, a probe of activity in brain structures involved with fear and anxiety. The laboratory is currently investigating the role of contextual fear and fear inhibition mechanisms in anxiety disorders. A study on the effect of propranolol, a beta-blocker, on fear acquisition and fear extinction is currently underway.

Over the past year Dr. J. Douglas Bremner and colleagues in the Laboratory of Neuroimaging have continued their pioneering work on hippocampal volume and associated deficits in hippocampal-base declarative memory. Research on women with early childhood sexual abuse-related PTSD included a study showing medial prefrontal cortex dysfunction and decreased right hippocampal function, with increased function in posterior cingulate and motor cortex, as measured with PET during the reading of traumatic scripts. Studies have also provided a comprehensive assessment of diurnal cortisol, and cortisol response to ACTH and CRF challenge, with measures of hippocampal volume in women with PTSD.

Findings based on single photon emission computed tomography (SPECT) showed a 41% reduction in benzodiazepine receptor binding in prefrontal cortex in Vietnam combat-related PTSD. A second part of the same project assessed a related anxiety disorder, panic disorder, and showed reduced left hippocampal binding and a correlation between anxiety level and reduced binding in the prefrontal cortex. Another project studied the hippocampus in women with abuse-related PTSD; preliminary results show a decrease in hippocampal function during memory retrieval of emotionally-valenced words in women with abuse-related PTSD.

Dr. Meena Narayan is beginning a project to assess hippocampal volume and memory in Gulf War combat-related PTSD. She is also spearheading an effort to assess the effects of treatment with phenytoin (dilantin) on hippocampal volume and memory in PTSD, which follows on earlier work by Bruce McEwen showing that this drug blocks the effects of stress on the hippocampus in animals.

Dr. Eric Vermetten is conducting a project to assess the effects of paroxetine on hippocampus and memory in PTSD. This study also uses measures of cortisol and hippocampal volume before and after treatment; it is based on preclinical work by Dr. Ronald Duman that showed that treatment with a selective serotonin reuptake inhibitor increases branching of dendrites of hippocampal neurons.

Dr. Vermetten is starting recruitment for a PET blood flow study that will examine neural correlates of smell in PTSD, using smells that activate orbitofrontal cortex and amygdala (sulfur aversive smell) as well as trauma specific (diesel) and neutral smells. He is also initiating recruitment, through Baltimore's Sheppard Pratt Hospital, of a study of hippocampal volume, cortisol, and memory in patients with Dissociative Identity Disorder.

Research collaborations have been established involving the Division, the State of Connecticut Department of Children and Families, and several faculty at the Child Study Center, spearheaded by Dr. Joan Kaufman. The collaborators are planning a study to evaluate a new intervention for children who are removed from their parents' care due to abuse or neglect, and to comprehensively evaluate the outcome of the children. Studies of HPA Axis functioning and hippocampal volume in abused children and adolescents are also planned.

Dr. Dolores Vojvoda has recently completed a three-year analysis of a group of refugees from Bosnia-Herzegovina, who have been followed since their arrival in the US in 1993-94, focusing on the evolution of trauma-related symptoms in traumatized refugees. She also has begun a retrospective study assessing life events, longitudinal course of trauma-related symptoms, use of alcohol and other substances, and work adjustment in World War II veterans who developed PTSD. Finally, she is characterizing the secretion pattern of the hormone leptin in adults with a diagnosis of PTSD, studying the relationship between leptin and cortisol and their role in stress responses to fear.

In other efforts, recruitment has begun on a VA-funded project, in collaboration with the Hines VAMC, to examine hippocampal volume and memory in male Vietnam and Vietnam-era veterans, by studying monozygotic twins with and without PTSD. Another project, funded by the Navy, is looking at correlates of neurological and cardiovascular

function in Vietnam POWs; clinical trials include studies in PTSD of paroxetine, nefazodone, prozac and dilantin.

Education and Clinical Laboratory Division

The Education and Clinical Laboratory Division, under the direction of Fred D. Gusman, is headquartered at the Menlo Park Division of the VA Palo Alto Healthcare System in California. The Division's research activities are centered on development and delivery of high-quality, cost-effective treatments; the Division also houses the Sleep Laboratory. During FY 1999 clinical research activities were restructured and streamlined, under the direction of Dr. Javaid Sheikh, into four subgroups: a Biobehavioral Group, Health Services Research, Aging Research, and a Core Resource Group.

Dr. Kent Drescher is analyzing data on an ongoing residential rehabilitation program evaluation protocol to examine outcomes, involving over 140 residents who were assessed at intake, exit, and four-month follow-up. PTSD and associated symptom severity, as well as other important therapeutic outcomes such as coping and quality of life, were monitored.

During FY 1999 Dr. Steven Woodward continued to pursue his research in the areas of PTSD-related sleep disturbances. This work focuses on the biological underpinnings of such disturbances, particularly nightmares, and their relation to the broader neurobiology of PTSD. This work has recently involved the adoption of ambulatory sleep methods and, through them, the polysomnographic recording of a sample of trauma-related nightmares. These trauma-related nightmares have been shown to emerge preferentially, but not exclusively, from rapid-eye-movement sleep.

Dr. Woodward is also Co-Principal Investigator, with Dr. Danny Kaloupek of the Behavioral Sciences Division, in a large study investigating the structural and functional status of the brain area known as the hippocampus in PTSD. This study is acquiring enhanced MRI-based morphometry of the hippocampus as well as electrophysiological and behavioral indices of hippocampal function in Vietnam and Persian Gulf combat veterans without histories of alcohol abuse.

The effect of stress hormones on the brain is the research focus of Dr. Steven Lindley. He obtained a VA Young Investigators Award to examine the relationship between the stress hormone cortisol and chronic versus acute PTSD, and has been collecting data on patients exposed to trauma in the community. He has continued his basic research efforts in the area of stress hormones, including the effect of cortisol on brain nerve cells that use the neurotransmitter dopamine.

Dr. Lindley is also an investigator on multi-centered trials of paroxetine, a VA study of fluvoxamine and guanfacine for treating PTSD, and an investigation of valproate for treating impulsive anger associated with PTSD. With Dr. Eve Carlson, he developed a measure of impulsive aggression and is collecting pilot data on that measure in male veterans in residential treatment and in a mixed-trauma sample of outpatients.

Dr. Carlson has been studying anger and impulsive aggression. In a sample of female veterans treated in Menlo Park's residential rehabilitation treatment program, trait anger was elevated compared to norms for adult women and was significantly related to PTSD symptoms, dissociation, and low self-esteem. For women whose trauma was related to experiences in combat (as opposed to sexual assault), trait anger was also elevated compared to female norms and was significantly related to both PTSD symptoms and the magnitude of exposure to wartime traumatic stressors.

During FY 1999, Dr. Gregory A. Leskin has been involved in a project on community violence. He is examining the relationship between PTSD and environmental stressors in urban vs. rural settings, using six VA Medical centers and clinics: Palo Alto, American Lake, Battle Creek, East Los Angeles Outpatient, Greater Los Angeles, and Omaha.

Dr. Annabel Prins continues to collect data for the development of a brief screen for PTSD in primary care. In collaboration with Dr. Gordon Bower and Heidi Sivers from Stanford University, she is also investigating visual and verbal memory in PTSD. Her interest in trauma concealment has continued, and now includes studies examining cultural differences in concealment.

Women's Health Sciences Division

Research in the Women's Health Sciences Division, located at the VA Medical Center in Boston and headed by Dr. Jessica Wolfe, focuses primarily on the correlates and aspects of gender that are linked to PTSD and associated syndromes such as depression, substance abuse, somatization, and eating disorders. Specific emphases include the effects of stress on physical health; the impact of sexual assault on women's mental and physical health; and the access, quality, satisfaction, and outcomes in the health service delivery system.

During FY 1999, the Division continued to disseminate findings from the national survey of women veterans' perceptions and experiences in their efforts to access VA health care services, involving 1500 VA users, former users, and non-users across the country. This study, recently concluded by Drs. Jessica Wolfe and Jennifer Daley, showed that the population of women veterans is changing markedly, reflecting new roles of women in the military. Further, women veterans overall and VA users in particular report a number of trauma-related military experiences not previously documented empirically.

Another health services research project, under the guidance of Drs. Lynda King and Daniel King of the Behavioral Science Division, focuses on the construct of VA employees' gender awareness in health care. The core concepts under study are the staffs' gender ideology, or beliefs about the proper roles of men and women, gender sensitivity in the delivery of care, and knowledge of health care programs and services especially available to women veterans. The product will be a gender awareness assessment inventory for organizational monitoring throughout the VHA.

Dr. Tamara Newton, a clinical psychologist with a specialty in the areas of health and behavioral medicine, has studied biological stress indicators (including autonomic, endocrinologic, and immunologic measures) and associated changes following stressful events. This work is currently being extended to gender comparisons, with particular attention to interpersonal stressors and emotion. She also continued work on a diagnostic database designed to aid in clinical program development and to determine the extent and nature of medical comorbidity among women veteran users of the Boston VAMC.

Also within the health and stress domain, Dr. Wolfe continues to be extensively involved in the Boston VA Environmental Hazards Center, one of three such VA centers across the country. As a funded principal investigator in that Center, she has extended her work with Drs. Susan Proctor and Roberta White, as well as other public and environmental health specialists, into the detailed study of the etiologies of Gulf War illnesses. She recently completed an analysis that suggests that reported exposure to particular Gulf environmental hazards may predict the presence of a multisymptom Gulf War illness in a manner confirmed in other cohorts.

Dr. Wolfe is also participating in several protocols that have further elucidated symptoms of ill veterans by using tests of working memory during functional brain imaging (fMRI) and neuropsychological test protocols. These projects have helped determine rates of various psychiatric conditions in Gulf War veterans and suggest that the presence of these disorders does not adequately explain the health problems of these individuals. Additionally, Dr. Wolfe and her medical colleague Dr. Joel Karlinksky are serving as site principal investigators for VA's Cooperative Study addressing the physical health of Gulf War veterans and their families; Dr. Wolfe was appointed to that study's Executive Committee.

Dr. Erica Sharkansky completed her study of the role of coping in the war-zone on PTSD and depression, using data from Dr. Wolfe's large Persian Gulf War cohort. Another large-scale Gulf War project, initiated by Drs. Lynda and Daniel King, is a three-year program to develop a prototype psychosocial risk and resilience inventory for use with personnel in future military deployments.

Much Division research continues to focus on etiological factors contributing to PTSD, as well as the psychological results of extreme stressors experienced in childhood, adolescence, and young adulthood. Drs. Lynda and Daniel King used the National Vietnam Veterans Readjustment Study database to document the relative contributions of prewar (childhood and adolescence), war-zone, and postwar variables in determining the severity of PTSD symptoms. They launched two additional studies using the same database: one that aims to examine domestic violence within Vietnam veteran families, and another that seeks to document evidence for postwar attainment, achievement, and personal growth among Vietnam veterans.

Dr. Sue Orsillo, a new member of the staff, focuses on understanding and treating the deficits of emotional experience and expression associated with trauma history. She is currently conducting a series of studies of women with and without a history of sexual assault, examining their internal and expressive response to film clips designed to elicit feelings of happiness, intimacy, fear, and sadness. Dr. Orsillo is also working on creating an acceptance-based behavioral group treatment targeted at reducing anxiety and avoidance.

Dr. Marie Caulfield, with Dr. David Riggs of the Behavioral Science Division, continues to conduct research on dating violence in young adult samples. Along similar lines, Drs. Lynda and Daniel King continued their work to examine how gender-role attitudes of both female and male young adults account for attributions about interpersonal violence and heterosexual relationships.

The DoD-funded research on women in the Marine Corps and their adaptation to first-term enlistment, under the direction of Drs. Caulfield, Newton, and Kiban Turner, is now in its third year. The study tests how adjustment to first-term enlistment is associated with pre-enlistment factors (psychiatric history and early childhood stressors) and current factors related to the military setting. Preliminary results suggest that premilitary trauma, although higher than civilian rates, has little impact on attrition during the earliest portion of enlistment — specifically, boot camp.

Ongoing analyses are examining what predictors are influential over time. The investigation is aimed at informing policy makers and clinicians concerned with improving adaptation and retention of Marine Corps women.

Finally, at the request of VA Headquarters, Dr. Wolfe and colleagues in Infectious Disease and General Internal Medicine helped VA to submit a six-site application to the National Institute of Allergies and Infectious Diseases to establish two research networks for HIV prevention and HIV vaccine development.

Pacific Islands Division

The Pacific Islands Division, headed by Dr. Sarah Miyahira and located in Honolulu, HI, conducts research on epidemiology, assessment, and treatment of PTSD. The Division has been particularly active in assessing cross-cultural factors related to the manifestation, evaluation, and treatment of PTSD, especially among Pacific Islander and Asian-American ethnocultural groups.

During 1999 Dr. Chalsa Loo completed her study of race-related factors in Asian-American Vietnam Veterans, leading to development of the Race-Related Stressor Scale (RRSS). Measurement of internal consistency, test-retest reliability, and concurrent validity points to the potential clinical and research utility of the RRSS. Findings of Dr. Loo's work support the link between race-related stress exposure and self-reported symptoms of PTSD and general psychological distress.

A research project for the National Alliance for the Mentally Ill on biomarkers of early stress, under the direction of Dr. Stefan Bracha, continued into its third year. The study explores stress markers in extracted teeth, and thus far has shown that there is a greater incidence of stress markers in individuals in the PTSD group. He has also received a grant from the National Alliance for Research on Schizophrenia and Depression for a two-year study that will validate a laboratory procedure for estimating early deleterious life experiences.

Drs. Sarah Miyahira and Antonio Gino have received approval to begin a project to examine the effectiveness of utilizing multiple modes of telecommunication in the assessment, diagnoses, and treatment planning for PTSD. Dr. Miyahira's collaborative work on the Sierra Pacific Network (VISN 21) Mental Illness Research, Education, and Clinical Center (MIRECC) is underway. She and Dr. Bracha are co-principal investigators on a double-blind randomized control study to investigate the efficacy of a selective serotonin reuptake inhibitor, an Alpha-2 Agonist, on PTSD symptoms. This project establishes a closer link with other VA facilities in the Sierra Pacific Network.

Dr. Edward Kubany, a researcher affiliated with the Center, completed the first year of a study of cognitive trauma therapy for battered women with PTSD. This is a PTSD treatment-outcome study targeting 120 formerly battered women; through September, 1999, approximately 30 women had enrolled in the project. Dr. Kubany also is working on a project to develop and validate a trauma history/PTSD screening instrument. The screening instrument is client-administered, self-scoring, and computerized, and will be validated in four patient settings at Tripler Army Medical Center: primary medical care, psychiatry, substance abuse treatment, and spouse abuse treatment.

Dr. Claude Chemtob presented in Australia at The Joint National Centre for War-Related PTSD and The Australian Society for Traumatic Stress Studies annual conference. He also continued his research on the treatment of anger and on brief treatments for PTSD.

Evaluation Division

Factors that may foster or hinder improvement in treatment, including biological, psychological, and social histories as well as institutional or program structures, are central to this Division's research efforts. The Division is located at West Haven, CT, and is headed by Dr. Robert Rosenheck.

During FY 1999 Dr. Rosenheck and Dr. Alan Fontana co-authored two articles on the treatment of PTSD and one on the transmission of the effects of exposure to war-zone trauma across generations. First, in collaboration with Marilyn Stolar, they examined the extent to which quality-of-care indicators that are based on data collected for administrative purposes can substitute for measures of treatment outcome that are based on data collected specifically on indices of clinical state before and after treatment. Of 12 administrative indicators, only two — number of readmissions and number of days re-hospitalized — were related significantly to poor clinical outcomes, and the magnitude of the relationships was generally small. The researchers concluded that administrative and outcome measures assess different aspects of quality of care and cannot be substituted for one another.

In another study of the treatment of PTSD, these investigators collaborated with Dr. David Johnson and other colleagues to examine the effects of a homogeneous versus a heterogeneous treatment environment on clinical

outcomes for the specialized inpatient treatment of PTSD. Dr. Johnson's program provided the data as it shifted from a heterogeneous environment, including veterans with PTSD and veterans with substance abuse problems, to a homogeneous setting that included only veterans with PTSD. Veterans seemed to like the homogeneous environment significantly more, rating it higher in satisfaction, support, order, clarity and amount of discussion of combat, but no differences in clinical outcome were found between the two environments.

In a third study, these investigators examined the transmission of the effects of trauma across generations, comparing Vietnam veterans whose fathers served in combat with those whose fathers did not serve in combat. Within the group of veterans who met criteria for PTSD, those whose fathers had been exposed to combat scored significantly higher in PTSD measures and guilt than those whose fathers had not been exposed to combat; this was not the case for the control group. Intergenerational effects of trauma, therefore, seem to emerge when the second generation itself has PTSD, and they appear to be more strongly related to intergenerational processes during the homecoming period than to differences in premilitary vulnerability.

This study also looked at the intergenerational effects of abusive violence. Researchers found that the children of veterans who participated in atrocities showed more behavioral disturbances than the did the children of other Vietnam veterans, even after controlling for other factors such as PTSD symptoms, combat exposure, and post-military family relationships.

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- Riggs, D.S. The case of Howard: Treatment of concurrent PTSD and obsessive compulsive disorder. *Cognitive and*

Behavioral Practice.

Roemer, L., Harrington, N.T., & Riggs, D.S. Behavioral/cognitive approaches to posttraumatic stress: Theory-driven, empirically based therapy. In C. Figley (Ed.), *Brief treatments in traumatology*. New York: Brunner/Mazel.

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Rosenheck, R.A. Primary care satellite clinics and improved access to general medical and mental health services. *Health Services Research*.

Rosenheck, R.A., & Fontana, A.F. Changing patterns of care for war-related posttraumatic stress disorder at Department of Veterans Affairs medical centers: A model of data-guided program management. *Military Medicine*.

Rosenheck, R.A., Stolar, M., & Fontana, A.F. Outcomes monitoring and the testing of new psychiatric treatments: Work therapy in the treatment of chronic posttraumatic stress disorder. *Health Services Research*.

Ruef, A., Litz, B.T., & Schlenger, W. Hispanic ethnicity and risk for combat-related posttraumatic stress disorder. *Cultural Diversity and Ethnic Minority Psychology*.

Ruzek, J.I., & Zatzick, D. Ethical considerations in reaction to research participation among acutely injured trauma survivors: An empirical investigation. *General Hospital Psychiatry*.

Sanacora, G., Mason, G.F., Rothman, D.L., Behar, K.L., Hyder, F., Petroff, O.A.C., Berman, R., Charney, D.S., & Krystal, J.H. Reduced cortical GABA levels in depressed patients determined by 1H-magnetic resonance spectroscopy. *Archives of General Psychiatry*.

Schnurr, P.P. The legacy of "Midtown" [Review of the book *Personal health and history: The Midtown Longitudinal Study*]. *Journal of Nervous and Mental Disease*.

Schnurr, P.P., Ford, J.D., Friedman, M.J., Green, B.L., Dain, B.J., & Sengupta, A. Predictors and outcomes of PTSD in World War II veterans exposed to mustard gas. *Journal of Consulting and Clinical Psychology*.

Schnurr, P.P., & Jankowski, M.K. Physical health and posttraumatic stress disorder: Review and synthesis. *Seminars in Clinical Neuropsychiatry*.

Schnurr, P.P., Spiro, A., III, & Paris, A.H. Physician-diagnosed medical disorders in relation to PTSD symptoms in older male military veterans. *Health Psychology*.

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Sharkansky, E.J., King, D.W., King, L.A., Wolfe, J., Erickson, D.J., & Stokes, L.R. Coping with Gulf War combat stress: Mediating and moderating effects. *Journal of Abnormal Psychology*.

Southwick, S.M., & Friedman, M. Neurobiological models of posttraumatic stress disorder. In T.M. Keane, E. Gerrity, & F. Tuma (Eds.), *Mental health consequences of torture and related violence and trauma, National Institute of Mental Health*. New York: Guilford Press.

Southwick, S.M., Paige, S., Morgan, C.A., Bremner, J.D., Krystal, J.H., & Charney, D.S. Neurotransmitter alterations in PTSD: Catecholamines and serotonin. *Seminars in Clinical Neuropsychiatry*.

Southwick, S.M., Vojvoda, D., Morgan, C.A., & Lipschitz, D. Stress effects of the Persian Gulf War. In G. Fink (Ed.), *Encyclopedia of stress*. San Diego: Academic Press.

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Stamm, B.H., & Friedman, M.J. Transcultural aspects of PTSD. In A.Y. Shalev, R. Yehuda, & A.C. McFarlane (Eds.), *International handbook of human response to trauma*. New York: Plenum Press.

Stevenson, V., & Chemtob, C.M. The impact of anger on treatment termination in PTSD. *Military Medicine*.

Streigel-Moore, R.H., Garvin, V., Dohm, F., & Rosenheck, R.A. Eating disorders in a national sample of hospitalized female and male veterans: Prevalence and psychiatric comorbidity. *International Journal of Eating Disorders*.

Tan, P-Z., Baldwin, R.M., van Dyck, C.H., Al-Tikriti, M., Amici, L., Roth, B., Khan, N., Charney, D.S., & Innis, R.B. Characterization of the radioactive metabolites of the 5-HT_{2A} receptor ligand [¹⁸F]altanserin in human, baboon, and rodent. *Journal of Nuclear Medicine Biology*.

Vaidya, V.A., & Duman, R.S. Alterations in heavy and light neurofilament proteins in hippocampus following chronic ECS administration. *Synapse*.

van Dyck, C.H., Tan, P-Z., Baldwin, R.M., Amici, L., Garg, P.K., Ng, C.K., Soufer, R., Charney, D.S., & Innis, R.B. PET quantification of 5-HT_{2A} receptors in the human brain: A constant infusion paradigm with [¹⁸F]altanserin. *Journal of Nuclear Medicine*.

Wagner, A.W., Wolfe, J., Rotnitsky, A., Proctor, S.P., & Erickson, D.J. A longitudinal investigation of post-traumatic stress disorder on physical health: Does gender play a role? *Journal of Traumatic Stress*.

Wilson, J.P., Friedman, M.J., & Lindy, J.D. (Eds.), *Core treatments for PTSD*. New York: Guilford Press.

Wolfe, J., Chrestman, K.R., Ouimette, P.C., Kaloupek, D., Harley, R.M., & Bucsela, M. Trauma-related psychophysiological reactivity in women exposed to war-zone stress. *Journal of Clinical Psychology*.

Wolfe, J., Erickson, D.J., Sharkansky, E.J., King, D.W., & King, L.A. Course and predictors of posttraumatic stress disorder among Gulf War veterans: A prospective analysis. *Journal of Consulting and Clinical Psychology*.

Wolfe, J., & Melia, K. History of post-military service adjustment. In *The encyclopedia of psychology*. Washington, DC: American Psychological Association.

Woodward, S.H., Murburg, M.M., & Bliwise, D.L. PTSD hyperarousal assessed during sleep. *Physiology and Behavior*.

SCIENTIFIC PRESENTATIONS ON PTSD BY NATIONAL CENTER STAFF

INTERNATIONAL SOCIETY FOR TRAUMATIC STRESS STUDIES

Washington, DC, November 1998

Bollinger, A., Blake, D., Ruzek, J., & Greene, R. "Operating characteristics of MMPI-2 personality disorder scales in veterans with PTSD."

Bremner, J.D. "Effects of childhood abuse on hippocampus and memory."

Carlson, E.B. "A path analysis predicting PTSD from early family and trauma variables."

Carlson, E.B. "Traumatic childhood abuse and aggression in male and female psychiatric inpatients."

Chemtob, C.M. "Children, trauma, and community."

Chemtob, C.M. "Disaster and anger in adolescents."

Chemtob, C.M. "Trauma survival."

Dowdall, D.J., Riggs, D.S., Kuhn, E., Lemasseeur, R., & Lam, L.M. "The impact of trauma memory activation on anger."

Drescher, K.D., Ramirez, G., Sharp, L., & Franklin, C.L. "Religious participation, PTSD, and anger among combat veterans: A replication study."

Erickson, D.J., Huang, M.T., Wolfe, J., Sharkansky, E.J., King, L.A., & King, D.W. "A prospective analysis of PTSD and depression symptoms."

Erickson, D.J., Wolfe, J., Proctor, S.P., & Friedman, M.J. "Health symptomatology among Gulf War veterans."

Foa, E., Keane, T.M., & Friedman, M. "Practice guideline for posttraumatic stress disorder."

Franklin, C.L., Hewette, S., Ramirez, G., & Drescher, K.D. "Impact of religious orientation on PTSD veterans' participation in AA/NA."

Friedman, M.J. "Stress and health: Relevance to Persian Gulf veterans?"

Gusman, F. "Development and history of specialized treatment programs for PTSD."

- Huang, M.T., Erickson, D.J., Wolfe, J., Sharkansky, E.J., King, L.A., & King, D.W. "Prospective analysis of posttraumatic stress disorder among Persian Gulf War veterans."
- Kaufman, M., Kimble, M.O., & Kaloupek, D.G. "P300 amplitude in non-medicated versus medicated veterans with PTSD."
- Keane, T.M. Discussant for "assessment of child and adolescent posttraumatic stress disorder."
- Keane, T.M. Discussant for "the phenomenology of anger in adults and children with PTSD."
- King, D.W., & King, L.A. "Overview of path analysis and structural equation modeling."
- King, D.W., King, L.A., Miller, P.M., & Leskin, G.A. "Factor analyses of PTSD measures: Review and recommendations."
- Knight, J.A., & McChargue, D. "PTSD symptomatology and alcohol use."
- Krinsley, K.E., Gallagher, J., Weathers, F.W., Siegfried, M., & Erwin, B. "Assessing lifetime trauma: Psychometric reliability and validity of the ELS."
- Kuhn, E., Dowdall, D.J., Lévasseur, R., Lam, L.M., & Riggs, D.S. "Effects of trauma priming on social problem solving."
- Lam, L.M., Covington, M., Byrne, C.A., Dowdall, D.J., Kuhn, E., Lévasseur, R., & Riggs, D.S. "Factors affecting female partners' reactions to veterans' disclosures about trauma."
- Leskin, G.A., & Keane, T.M. "Thirty years after Tet: The enduring legacy of the Vietnam War."
- Leskin, G.A., Rich, J., Riggs, D.S., King, L.A., & King, D.W. "The effects of community violence: PTSD, depression and functional health."
- Mannix, L.M., Sharkansky, E.J., King, D.W., King, L.A., & Wolfe, J. "Longitudinal effects of coping with combat stress on psychological distress."
- McChargue, D., & Knight, J.A. "Nicotine dependence and PTSD: Implications to emotion regulation."
- Niles, B.L., Grace, M., & Kaloupek, D.G. "Examining PTSD in primary care: Obstacles and advances."
- Patik, H., Prins, A., Ouimette, P., & Koenen, K. "Perceptions of fear, helplessness, and horror in traumatic and non-traumatic events: A preliminary analysis."
- Prins, A., Kimerling, R., Cameron, R., Ronfeldt, H., Wolfe, J., & Stewart, J. "Properties of the Women's War-Time Stressor Scale."
- Ruzek, J.I., & Zatzick, D. "Immediate responses to research participation of hospitalized survivors of traumatic injury."
- Saxe, G., Stoddard, F., Ford, J., Markey, C., Miller, A., Taft, C., King, D.W., & King, L.A. "The Child Stress Reaction Checklist: A measure of ASD and PTSD in children."
- Schnurr, P.P. "PTSD as a predictor of service utilization in Vietnam veterans." Chair and presenter in symposium, "PTSD, service utilization, and primary care."
- Sharkansky, E.J., King, D.W., King, L.A., & Wolfe, J. "Coping with Persian Gulf War combat stress."
- Sharp, L., Thomas, T., Ramirez, G., Murphy, R., Woodward, S., & Drescher, K.D., "Association of intelligence with PTSD severity: Replication and extension."
- Woodward, S.H. "Fractionated arousal: Implications for models of PTSD sleep disturbance."
- Woodward, S.H. "Hippocampus, exploratory behavior, and stress adaptation."
- Zimering, R.T., Munroe, J., Knight, J.A., & Vielhauer, M. "GAF scores in a PTSD population: Rater unreliability."

ASSOCIATION FOR THE ADVANCEMENT OF BEHAVIOR THERAPY

Washington, DC, November 1998

Covington, M., Lam, L.M., Riggs, D.S., Byrne, C.A., Dowdall, D.J., Kuhn, E., & Lévasseur, R. "The impact of PTSD and partner's emotional expression on subjective levels of distress during problem discussions."

Dowdall, D.J., Riggs, D.S., Kuhn, E., Levasseur, R., & Lam, L.M. "The experimental manipulation of trauma memories: Impact on fear, anger, and perceived emotional control."

Evans, B.A., Hestand, T.I., Cargile, B.J., & Orsillo, S.M. "Precipitants to dissociation: An exploratory investigation."

Evans, B.A., Lundgren, J.D., & Orsillo, S.M. "Utilization of resource loss to predict distress and PTSD symptomatology in a mixed trauma population."

Kuhn, E., Dowdall, D.J., Levasseur, R., Lam, L.M., & Riggs, D.S. "A behavioral measure of relationship problem solving in Vietnam combat veterans with PTSD."

Lam, L.M., Covington, M., Byrne, C.A., Riggs, D.S., Dowdall, D.J., Kuhn, E., & Levasseur, R. "The influence of an individual's PTSD and fear of intimacy on couple satisfaction."

Leskin, G.A., King, L.A., & King, D.W. "Comorbid PTSD, depression, and anxiety: Implications for discriminant validity."

Leskin, G.A., Rich, J., Riggs, D.S., King, L.A., & King, D.W. "The effects of community violence on young adults: PTSD and depression in a primary care setting."

Leskin, G.A., Rich, J., Riggs, D., King, L.A., & King, D.W. "The effects of community violence on young adults: PTSD and depression in primary care settings."

Levasseur, R., Lam, L.M., Dowdall, D.J., Kuhn, E., & Riggs, D.S. "The influence of PTSD on social problem solving orientation and relationship satisfaction."

McLaughlin, M.S., Cargile, B.J., Hestand, T.I., & Orsillo, S.M. "The role of dissociation in inhibiting social contact."

McLaughlin, M.S., Munkirs, D.S., Orsillo, S.M., & Marx, B.P. "Attitudes toward health care utilization among childhood sexual abuse survivors."

Miranda, R., Meyerson, L.A., Marx, B.P., & Orsillo, S.M. "An investigation of the role of psychological factors in the physical complaints of Vietnam veterans with PTSD."

Street, A.E., & Arias, I. "Psychological abuse and posttraumatic stress disorder: Examining the role of shame."

CONFERENCE ON FEDERALLY SPONSORED GULF WAR VETERANS' ILLNESSES RESEARCH Pentagon City, VA, June 1999

King, D.W., King, L.A., Vogt, D.S., Stone, E.R., & Suvak, M.K. "Psychosocial risk and resilience factors related to health in Gulf War veterans."

King, D.W., King, L.A., Vogt, D.S., Stone, E.R., & Suvak, M.K. "Psychosocial risk and resilience factors related to health in Gulf War veterans."

Krengel, M., White, R.F., Proctor, S.P., Wolfe, J., Heeren, T., Sullivan, K., & Devine, S. "Neuropsychological deficits in treatment-seeking Persian Gulf War-era veterans."

Proctor, S.P., Erickson, D., Huang, M.T., Hu, H., & Wolfe, J. "Risk factors for 'Multisymptom Illness' in Gulf War veterans."

Proctor, S.P., Harley, R., & Wolfe, J. "Health-related functional status (as measured by the SF36) in Gulf War veterans."

Proctor, S.P., Stinson, M.C., Heaton, K.J., Pepper, L., & Ozonoff, D. "Reported oil fire smoke exposure compared to modeled estimates in Gulf War veterans."

EUROPEAN SOCIETY FOR TRAUMATIC STRESS STUDIES Istanbul, Turkey, June 1999

Keane, T.M. Discussant for "Psychotherapeutic approaches to the treatment of PTSD."

Keane, T.M. "Mental health consequences of torture and related trauma: Lessons learned from the NIMH work group."

Keane, T.M. "Psychological treatments for posttraumatic stress disorder: Economic costs, behavioral treatments, and responder analyses."

Keane, T.M. "Trauma-related research and ethics: Is good research good for participant's health?"

Newman, E., Walker, E., Kaloupek, D.G., & Keane, T.M. "Ethical decision making among trauma researchers."

AMERICAN PSYCHOLOGICAL ASSOCIATION

Boston, MA, August 1999

Fisher, L.M., Niles, B., Quinn, S., & Munroe, J. "Group treatment of PTSD."

Huang, M.T., King, L.A., King, D.K., Erickson, D.J., & Wolfe, J. "Stressor exposure-PTSD symptom severity relationship: An inquiry on directionality."

Keane, T.M. "Posttraumatic stress disorder: An agenda for entering the new millennium."

Knight, J.A., Rierdan, J., & Meschede, T. "The Civilian Mississippi Scale in four populations."

Litz, B.T., Bolton, E., & Roemer, L. "Prospective study of US peacekeepers in Bosnia."

McTeague, L.M., McNally, R.J., & Litz, B.T. "Predictors of current PTSD in female Vietnam veteran healthcare providers."

Miller, P.M., & Lisak, D. "The role of emotional functioning in the cycle of violence."

Savarese, V.W., Gold, J.I., Suvak, M.K., King, D.W., & King, L.A. "Mental health predictors of marital functioning and violence."

Schnurr, P.P., Spiro, A., III, & Paris, A.H. "Physician-diagnosed medical disorders in older military veterans."

Suvak, M.K., Gold, J.I., King, L.A., & King, D.W. "Coping in the war-zone and veterans' general life adjustment."

Turner, K., Dixon, A., & Caulfield, M. "Training, preparation, self-efficacy and emotional well being: Impact on Marine Corps attrition."

OTHER

Bremner, J.D. "Comorbidity of PTSD and dissociative disorders." American Psychiatric Association Annual Meeting, Toronto, Canada, May 1998.

Bremner, J.D. "Devastating effects of childhood abuse on mind and brain." American Psychiatric Association Annual Meeting, Toronto, Canada, May 1998.

Bremner, J.D. "Does stress damage the brain?" Grand Rounds, Columbia University School of Medicine, New York, NY, August 1998.

Bremner, J.D. "Hippocampus and memory in PTSD and depression." American College of Neuropsychopharmacology Annual Meeting, San Juan, Puerto Rico, December 1998.

Bremner, J.D. "Lasting effects of childhood abuse on memory, cortisol and the hippocampus." A joint presentation of the Connecticut Mental Health Center and the Department of Mental Health and Addiction Services, State of Connecticut, in association with the National Alliance for the Mentally Ill-Connecticut, New Haven, CT, March 1999.

Bremner, J.D. "Lasting effects of stress on memory and the hippocampus." Grand Rounds, Yale University School of Medicine, New Haven, CT, October 1998.

Bremner, J.D. "Measurement of dissociative states with the Clinician Administered Dissociative States Scale: Development and psychometric properties." International Epidemiology Association Annual Meeting, Florence, Italy, September 1999.

Bremner, J.D. "Neural mechanisms in delayed recall of childhood abuse." Sheppard Pratt Hospital, Baltimore, MD, November 1998.

Bremner, J.D. "Neuroimaging in PTSD and depression." Grand Rounds, Medical University of South Carolina, Charleston, SC, September 1999.

Bremner, J.D. "Neuroimaging of PTSD and depression." Dr. Paul Wood Memorial Lecture, University of Utah School of Medicine, Salt Lake City, Utah, February 1999.

Bremner, J.D. "Neuropsychological models and neural mechanisms in dissociation." International Symposium About

Controversies in Psychiatry: Dissociative States, Barcelona, Spain, March 1999.

Bremner, J.D. "The neurobiology of posttraumatic stress disorder: A clinician's primer." Yale Psychiatric Institute Trauma Studies Program Conference, New Haven, CT, May 1998.

Bremner, J.D. "Traumatic memories lost and found: Can lost memories of childhood abuse be found in the brain?" Yale Psychiatric Institute Trauma Studies Conference, New Haven, CT, September 1999.

Caulfield, M.B., Riggs, D.S., & Street, A.E. "The role of commitment in the perpetration of dating violence." International Family Violence Research Conference, Durham, NH, July 1999.

Chemtob, C.M. "Acute stress disorder and disaster." Fifth World Congress of the International Association of Emergency Psychiatry, Brussels, Belgium, October 1998.

Chemtob, C.M. "Public health approaches to psychosocial intervention in complex humanitarian emergencies." Solomon Asch Center for the Study of Ethnic Violence. University of Pennsylvania, Philadelphia, PA, July 1999.

Chemtob, C.M. "The survival mode theory of PTSD." Annual Meeting of the Australasian Society for Traumatic Stress and the Australian National Center for PTSD, Brisbane, Australia, May 1999.

Chemtob, C.M. "The treatment of trauma-related anger." Annual Meeting of the Australasian Society for Traumatic Stress and the Australian National Center for War-Related PTSD, Brisbane, Australia, May 1999.

Fehon, D.C., Grilo, C.M., Lipschitz, D.S., Jilton, R., & McGlashan, T.H. "Correlates of community violence exposure in adolescents." 152nd Annual Meeting of the American Psychiatric Association, Washington, DC, May 1999.

Friedman, M.J. "Advances in pharmacotherapy for PTSD." Consensus Conference on PTSD, European College of Neuropsychopharmacology, Nice, France, March 1999.

Grillon, C. "Anxiety, vulnerability to anxiety disorders, and the startle reflex." Conferences Philippe Laudat, Aix-les-Bains, France, October 1998.

Huang, M.T., King, L.A., King, D.W., Erickson, D.J., & Wolfe, J. "Relationship between changes in stressor endorsements and posttraumatic stress disorder (PTSD) symptomatology." Annual Meeting of the Midwestern Psychological Association, Chicago, IL, April 1999.

Kaloupek, D.G. Discussant for "Developments in cognitive-behavioral treatment of anxiety disorders." Conference of the Aaron T. Beck Institute, Assumption College, Worcester, MA, October 1998.

Keane, T.M. "Cross cultural perspectives in the treatment of PTSD conference." Bradford, England, November 1998.

Keane, T.M. "Recent advances in the assessment and treatment of posttraumatic stress disorder." Indiana Psychological Association Annual Meeting, Indianapolis, IN, October 1998.

King, L.A., & King, D.W. "Male-perpetrated domestic violence: Testing a series of multi-factorial family models." Violence Against Women and Family, Violence Research, and Evaluation Program, National Institute of Justice Grantees Meeting, Crystal City, VA, June 1999.

Lindley, S.E., Bengoechea, T.G., Schatzberg, A.F., & Wong, D.L. "Strain differences in mesotelencephalic dopaminergic responses to glucocorticoids." Annual Meeting of the Society for Neuroscience, Los Angeles, CA, November 1998.

Lipschitz, D.S., Rasmussen, A.M., Anyan, W., Cromwell, P., & Southwick, S.M. "Exposure to violence and posttraumatic stress symptoms in urban, inner-city adolescent girls." 152nd Annual Meeting of the American Psychiatric Association, Washington, DC, May 1999.

Lisak, D., & Miller, P.M. "Unmasking the never-incarcerated rapist." National Symposium on Non-Stranger Sexual Assault. Sexual Assault Inter-Agency Council, Estes Park, CO, September 1999.

McHugo, G., Kelsey, R., Friedman, M.J., McDonagh-Coyle, A., Jalowiec, J., & Kappas, A. "The effect of trauma-related content in an active coping task on facial and autonomic reactivity in women with post-traumatic stress disorder." Annual Meeting of the Society for Psychophysiological Research, Denver, CO, October, 1998.

Miller, P.M., Savarese, V.W., King, L.A., King, D.W., & Wolfe, J. "Toward gender-aware VA health care: Staff ideology, sensitivity, and knowledge." Annual VA HSR&D Conference, Washington, DC, February 1999.

Miranda, R., Meyerson, L.A., Marx, B.P., & Orsillo, S.M. "The relationship between physical complaints and healthcare utilization among Vietnam veterans with posttraumatic stress disorder." Annual meeting of the Society for Behavioral Medicine, San Diego, CA, March 1999.

Miranda, R., Meyerson, L.A., Marx, B.P., Orsillo, S.M., & Jones, D. "Healthcare utilization patterns of Vietnam veterans with posttraumatic stress disorder: The influence of marital status." Oklahoma Psychological Association, Oklahoma City, OK, April 1999.

Morgan, C.A. "Neurobiological correlates of human performance during interrogation stress." Joint Services SERE Association (JSSA) Psychology Conference, Spokane, WA, May 1999.

Morgan, C.A. "Plasma NPY in humans experiencing uncontrollable stress." Norepinephrine Conference, Key West, FL, May 1999.

Morgan, C.A. "Psychological and biological responses to battlefield stress." U.S. Army Post graduate behavioral sciences short course, Bethesda, MD, September 1999.

Morgan, C.A. "Stress hardiness and stress vulnerability: A prospective study of humans exposed to uncontrollable stress." FASOTRAGRUPAC-2, NAS, NI, U.S. Navy, Coronado, CA, June 1999.

Morgan, C.A., Fox, P., Wang, S., Hazlett, G., Rasmusson, A., Hauger, R., Southwick, S.M., & Charney, D.S. "Neuropeptide-Y in humans participating in high intensity military training." SFN Annual Meeting, Los Angeles, CA, November 1998.

Mori, D.L., Niles, B.L., Williams, W.M., Grace, M., Costello, T., Lambert, J.F., Orlander, J., & LoCastro, J.S. "PTSD and chronic pain: Comorbidity in primary care." Annual Meeting of the Society for Behavioral Medicine, San Diego, CA, March 1999.

Orcutt, H.K., & Cooper, M.L. "Alcohol and condom use in serious and casual relationships among heterosexual adolescents and young adults." Midwestern Psychological Association, Chicago, IL, May 1999.

Proctor, S.P., Wolfe, J., & White, R.F. Boston Environmental Hazards Center: "Research on Multiple Chemical Sensitivity and Gulf War veterans." The Health Impact of Chemical Exposures During the Gulf War: A Research Planning Conference, Atlanta, GA, February/March 1999.

Rasmusson, A.M., Woolery, C., Morrow, B.A., Shi, L., & Roth, R.H. "Chronic fluoxetine blocks conditioned stress-induced increases in prefrontal cortical dopamine utilization." SFN Annual Meeting, Los Angeles, CA, November 1998.

Riggs, D.S., Dowdall, D.J., & Kuhn, E. "Posttraumatic stress disorder, anger and relationship conflict as predictors of marital violence." International Family Violence Research Conference, Durham, NH, July 1999.

Riggs, D.S., Dowdall, D.J., & Kuhn, E. "The impact of trauma-related arousal on self-reports of domestic violence perpetration." International Family Violence Research Conference, Durham, NH, July 1999.

Roemer, L., Orsillo, S.M., Leigh, J., Altschuler, L., & Litz, B.T. "The relationship between PTSD, alexithymia, and emotional reactivity." Annual Meeting of the American Psychological Society, Denver, CO, June 1999.

Rosenberg, H., Rosenberg, S., Wolford, G., Manganiello, P., McDonagh-Coyle, A., Brunette, M., Williamson, P., & Berry, R. "The relationship between trauma, abuse and PTSD in three medical help seeking populations." The 20th Congress of APAL-PSICOHAVANA'98, Havana, Cuba, October 1998.

Rosenheck, R.A. "Changing patterns of care for war-related posttraumatic stress disorder at Department of Veterans Affairs Medical Centers: A model of data-guided program management." William C. Porter Award Lecture, Association of Military Surgeons of the United States, November 10, 1998.

Sharkansky, E.J. "Sexual trauma and women veterans: Research and clinical implications." National Women Veterans' Coordinators Conference, Chicago, IL, September 1999.

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