Psychological and Psychosocial Consequences of Combat and Deployment

WITH SPECIAL EMPHASIS ON THE GULF WAR

David H. Marlowe

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Prepared for the Office of the Secretary of Defense

National Defense Research Institute

RAND

Approved for public release; distribution unlimited

DEDICATION

This report is dedicated to all those who served in Operation Desert Storm. It is also dedicated to the memory of my late wife, Dr. True Woodruff Marlowe (1930–1996), whose values from her Quaker heritage have informed both of our lives. From her I learned particularly always, within one's knowledge and competence, to speak truth to power.

PREFACE

Veterans of the Persian Gulf War report a variety of physical and psychological symptoms, some of which remain unexplained. In an effort to determine the extent to which these symptoms may be related to Gulf War service and to develop policies to better deal with health risks in future deployments, the Secretary of Defense designated a special assistant to oversee all Department of Defense (DoD) efforts related to the illnesses of Gulf War veterans. The Office of the Special Assistant for Gulf War Illnesses (OSAGWI) is charged to do everything possible to understand and explain the illnesses, to inform veterans and the public of its progress and findings, and recommend changes in DoD policies and procedures to minimize such problems in the future.

Stress was identified as one area of concern related to illnesses among Gulf War veterans. Dr. David Marlowe, who is an expert in the area of stress related disorders, briefed leaders in DoD and other agencies at RAND on the subject. RAND was then asked to work with Dr. Marlowe to prepare a monograph that summarized those views. This monograph presents the views of Dr. Marlowe based on many years of research, including investigations made in the Gulf. The views put forth here are his and are not meant to represent either a complete review of the history of stress or a review of the literature on stress as it relates to the Gulf War. (For a review of the scientific literature as it pertains to stress in the Gulf War, See Marshall, Davis, and Sherbourne, 1999.)

This document should interest anyone involved in the study of Gulf War illnesses, and, more broadly, those who served and the general public. It was sponsored by the Office of the Special Assistant and was carried out jointly by RAND Health's Center for Military Health Policy Research and the Forces and Resources Policy Center of RAND's National Defense Research Institute. The latter is a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the unified commands, and the defense agencies.

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FOREWORD

COMBAT STRESSES

A tremendous lack of understanding about the nature and power of combat stresses (psychosocial, traumatic, and environmental) still persists today, despite the massive amount of data and work done to elucidate the cause and effect of these stresses in this century. Much of our knowledge about psychophysiological processes is new and is either not understood or not disseminated widely. Therefore, there is even less knowledge outside of the military and scientific communities about the nature of the effects of such stresses and their psychological, immunological, and psychophysiological consequences. Data accumulated in recent years have shaped the ultimate perspective of this report. Simply put, a scratch on the mind is a scratch on the body as well. As we now understand, the mind is a function of the brain. Brain and body represent a single system; however, it is not a closed system operating solely in terms of phenomena that take place within. Rather, it is an open system articulated to the events of the external world. These events are then transponded or translated by mind/brain into physical events within the body that will ultimately have lesser or greater physiological consequences for an individual experiencing them. There is a vast scientific literature supporting this perspective, and some of it will be cited during the course of this report. While there is still much in terms of mechanisms that we do not yet fully comprehend or understand—the outlines of the biological, psychological, and physiological processes involved have begun to take form. Yet the power and capacity of many events appear to be significantly controlled by cultural beliefs and perceptions that not only alter from human group to human group but also over time. Acknowledging these factors means acknowledging or accepting that the outcomes of exposure to certain events are the result of a complex interaction among person, social group, and event. For some, this is less comforting to accept than simple notions of direct causality.

Throughout history, persistent cultural biases have attempted to deny various aspects of human psychological vulnerability, labeling them as not applicable

or demeaning if stated about "people like us," for example. To some extent these cultural biases remain today. This said, it is important to keep in mind that, with the exception of panic and certain other events that involve the massive physical and psychological erosion of a military organization, the proximate and long-term acute stress of combat, and the subacute stress of dangerous deployment, combined with prolonged physical and psychological hardships appear to have dysfunctional effects on only a small to moderate number of soldiers. The majority, enduring the horrors of the battlefield, recover from their initial shock, continue on, do their job, and perform well. McFeely (1981), in his biography of U.S. Grant, described the carnage of the first day at Shiloh when the immense new firepower of the rifled musket worked its shattering effects upon men who had been used to Napoleonic tactics, asking, "How was it that Grant's bewildered, bloody troops rallied so strongly the next day that they drove the Confederates into retreat to Corinth?" Just as McFeely gropes for an answer, so do we.

We can say that deployment and combat will leave, at a minimum, "scratches on the mind"—long-term memories for some who participated. The loss of comrades, the experience of pain, and the memories of fear, deprivation, hunger, thirst, and killing will remain. For most soldiers, the psychic wounds close; they themselves endure and go on. After the wars throughout history, including and after the Gulf War, most soldiers have, on balance, viewed their experience as a positive one. Soldiers saw their service as contributing to their own growth and their capacity to understand others and the world, and as enhancing their senses of self-worth and identity. Above all, in any war perceived as a "just" one, in which victory is achieved over some perceived evil, the stresses and sacrifices are not seen as exactions that have injured the service member's sense of self and negatively altered his or her life course. Participation is recalled as a necessary and important contribution to human decency, the common wealth, and the maintenance of one's cultural integrity, personal values, and liberties.

In this report, we focus on the patterns of breakdown, symptoms, and long-term sequelae caused by combat in a minority of soldiers. We must remember that we try to understand the "victim" in a context in which many who had the same experiences and who participated directly with him or her did not develop the same patterns of symptoms. Perhaps the greatest danger, both explicit and implicit, is the temptation to build our measuring instruments for "normalcy" out of the parameters of either the pathological or the ideal.

HEALTH AND MENTAL HEALTH

There appears to be a widespread contemporary American vision of normalcy: a life that is free of physical symptoms, in which there has been neither exposure to nor memory (repressed, suppressed, or otherwise) of traumatic events, or at a minimum such memories were cleared and detoxified through some mechanism of positive closure. In this popular definition, normalcy appears to mean being continually satisfied with one's health status, almost always happy, productive, and fulfilled.

The controversy about how health is defined (which has many diagnostic consequences) dates to the World Health Organization (WHO) battles of the 1950s about the definitions of "health" and "mental health." This followed the adoption of the ideal WHO definition of 1946: "A state of complete physical, mental and social well being and not merely the absence of disease or infirmity." Do we adopt "ideal standards" or popular standards? It impresses me that in the last two decades a large segment of our population appears to have moved, in its cultural beliefs, to the use of an "ideal" measuring implement, based particularly on the individual's self-assessment of what "one's life should be like," e.g., essentially symptom free. This has moved us radically away from the reality of the human condition in which most of us have some nagging physical and mental symptoms for much of our lives. If one looks at history, developing countries, the poor, or soldiers (engaged in a highly stressful, physically and psychologically demanding and always potentially dangerous profession), this reality is clear. One recognizes that such culturally espoused ideal states of health are at best illusory. Life is filled with traumas, fears, apprehensions, hunger, aches, pains, illnesses, failures, unfulfilling work, and memories of pain. It is balanced by moments of happiness and pleasure, memories of positive events, doing one's duty, and enduring. The evolutionary history of our species is one in which those individuals who have survived to continue the human line have done so in the face of extreme violence, hunger, drought, flood, diseases, and war.

If we conceive that the expected outcomes of exposure to stress, pain, and life events should not deviate from ideal standards of health, there is the danger that some will allocate all the negative phenomena to which body and brain are normally heir to dark and powerful pathogens where none may exist. In that case, we will not only fail the test of realistic measurement of looking at health status as based on normative criteria, but we may also disallow the possibilities of realistic treatment and symptom amelioration.

SUMMARY

Although it has not always been recognized that stress can cause both psychological and physiological symptoms, medical science does so today. Few events are more stressful than war, and a rich literature examines the relationship between combat-induced stress and various symptoms manifested by soldiers, sailors, and airmen. During and after every war this nation has fought, members of its armed forces have suffered ill effects from combat-related stress, and the Persian Gulf War was no exception.

But the Gulf War was unusual. First, it was mostly an air war and against an overmatched enemy. After the first few days, coalition aircraft owned the skies, and the Iraqi air defenses posed only a marginal threat. Second, it was short. The air war lasted less than two months, and the ground war was even shorter, lasting a matter of days. The huge disparity between the coalition forces and those of Iraq not only translated into a short war but also into one of few casualties for the coalition. The United States sustained fewer than 200 killed, an unusually low number of casualties given the number of forces arrayed on both sides and the lethality of their equipment.

But one of the most striking aspects of the Gulf War appeared after it was over. Thousands of veterans began reporting a wide variety of symptoms, ranging from sleeplessness, to aching joints, to memory loss that remained undiagnosed. Many of the symptoms are evocative of those reported by veterans of previous wars and attributed to the psychological trauma of combat. While multiple pathways are being followed in an effort to determine the cause of these symptoms, the fact that at least some of the symptoms mirror those caused by combat-induced stress in previous wars raises the possibility that stress plays a role here as well.

PURPOSE AND ARGUMENT

This report investigates that possibility (i.e., that stress might have played a role in some of the undiagnosed illnesses among Persian Gulf War veterans

(PGWV)), but the task is complex because the relationship between stress and physical and psychological symptoms is complex. The physical and psychological interact with each other, serving as both cause and effect. Individual differences make the task of teasing out cause from effect even more difficult. Two soldiers exposed to the same combat situation may react very differently. Also, how they react is shaped, in part, by cultural influences, which vary over time. The medical profession itself adds yet another layer of complexity. Doctors do not practice medicine in a vacuum. They are part of a culture and a profession, each of which may shape the way they respond to a patient's symptoms. In some instances, these anthropological influences have led to a search for a singular cause of the undiagnosed symptoms of Gulf War veterans. Furthermore, the veterans themselves are subject to cultural influences that condition their own responses to their illnesses.

This report argues that the trauma of combat, high-stress environments, or simply deploying to a theater of war can have immediate and long-term physical and psychological consequences. These consequences are not random; rather they follow a pattern that can be traced throughout the history of warfare, even though the manner and scope of warfare have changed enormously. In making this argument, the report implicitly rejects the concept of a singular cause for the undiagnosed illnesses of the veterans. It is argued that this concept flows naturally from a model developed to explain postwar illnesses of Vietnam veterans.

APPROACH

The report takes a historical approach. It reviews conflicts of the past in an effort to provide a useful framework to interpret the symptoms Gulf War veterans are reporting. The examples chosen are meant to be illustrative but representative of the current thought at the time.

HISTORICAL OVERVIEW OF THE PSYCHOLOGICAL CONSEQUENCES OF BATTLE STRESS

War in Classical Times

Study of warfare in classical times yields some important lessons. First, the ancient world recognized the power of combat to alter behavior by means other than direct killing. Part of the Greek phalanx's power was its psychological effect on the enemy: Its sound and appearance could so frighten opponents that they would flee. Second, they recognized that the effects of combat could transcend the battle itself and affect people long after the fight. Third, the dependence of members of the unit on each other was nowhere more prevalent than

in the Greek phalanx, where a break in any part of the line could spell disaster for all. Thus, sanctions for withdrawing were draconian.

French Revolution and the Rise of Citizen Soldier

From classical times through the middle ages, the aristocracy generally provided the officers, and the ranks were filled with full-time soldiers, who were generally divorced from a society that was not much interested in their fate. Most of these soldiers died, either in battle or from disease (a wound was usually a death sentence). If a soldier managed to survive, he simply served to an old age. With the French Revolution and subsequently the Napoleonic armies came conscription and the citizen soldier, whose fate was of interest to society because he was of society. The types of stresses these soldiers faced—danger of combat, separation from family, privation, and hardship—mirrored those of the men who formed the phalanx. They also drew support in the same way that the Greeks did, by depending on the other members of the group. A second important source of support was the leader. The best leaders combined tactical skill with concern for the troops.

Modern War

The Civil War is generally viewed as the first modern war. Since then, the effects of war on soldiers have been viewed from medical and cultural perspectives that defined a set of causes for these effects. The culture of the 1860s left little room for explaining why men behaved as they did in battle: They were either heroes or cowards. As is eloquently depicted in Stephen Crane's *The Red Badge of Courage*, soldiers ran away from battle because they were cowards. It was a character flaw that could, in some cases, be overcome by "hardening," an adaptive process by which soldiers anesthetize themselves to the horror and hardship of prolonged combat. The values and expectations of the time were closer to those of ancient Greece than today. Only two feasible routes of exit existed: desertion (which was rife) and an incapacitating wound, itself a problematic path given what medicine knew about infection.

Accounts of the time make it clear that stress-induced disorders did exist, although given the medical and cultural biases of the time no ready taxonomy for diagnosing them was at hand. These symptoms, which included prolonged elevated heart rate, became known as "soldier's heart." Soldier's suffering from it experienced overwhelming fatigue and were incapable of sustained effort. Postwar effects from that time are difficult to discern today, in large part because of the culturally induced predilection of veterans to retreat into themselves and remain silent about war experiences. One study on veterans in Indiana catalogues symptoms consistent with posttraumatic stress disorder.

19th and Early 20th Century Conceptual and Theoretical Developments. Concepts developed in the late 19th and early 20th centuries shaped the way doctors treated stress-related injuries in World War I and World War II. In medicine, new categories of diagnostic thought emerged and helped define subsequent approaches and analytic tools. The conditions of hysteria, thought to afflict only females, and hypochondria, the male analog of hysteria, were redefined as mental disorders. "Neurasthenia" was developed as a category of mental illness, the symptoms of which included weakness, sleeplessness, mental problems, and irrational fears. The translation of hysteria into a gender-free symptom began with the medical study of an extended series of railway accidents, many victims of which displayed symptoms, often well after the accident, but no detectable physical injury.

Two other developments were significant. One was the growth of psychoanalysis as a method of psychotherapy, which attributed problems to a patient's early developmental history. The second was the concept of suggestibility, which holds that the patient produces the symptoms that the doctor "expects" him to produce. These symptoms could be ameliorated by countersuggestion. The three concepts—neurasthenia, suggestibility, and psychotherapy—subsequently shaped how causes of psychological consequences of combat were attributed.

World War I. World War I is particularly interesting because it provides the first clear example of complex interacting variables that produce both symptoms and causes. Once the war of maneuver ended and that of the trench became dominant, significant numbers of soldiers began to suffer from "shell shock." In the past, the problems associated with this syndrome would have been characterized simply as cowardice or malingering. The initial response was to attribute symptoms to a single cause, massive artillery attacks, whose shock waves caused physical injuries. The injuries resulted in functional conversion disorders, such as blindness, paralyses, and amnesia, with no physical basis. However, because no physiological basis could be found for these symptoms and because they appeared in some patients who had suffered no physical trauma, doctors began to regard them as psychological disorders. Treatments varied but all were rooted in preexisting concepts. A form of electric shock that applied high voltage but low amperage was popular and reportedly effective. Other approaches employed what were called "disciplinary therapies." Treatment differed between enlisted and officers particularly in the British Army, with the officers seldom being subject to the more radical therapies. Typical treatment for an officer was rest, encouragement, and, generally, removal from the combat theater for rehabilitation. Group cohesion was also employed as a way to motivate soldiers to recover. Strong bonding occurred at the platoon and company levels because these groups became each soldier's

source of survival. Thus, treatment was carried out as close to the front lines as possible. The soldier expected—and was expected—to return to his unit.

Psychiatrists were impressed by the speed with which cures could be effected. It was thought that symptoms resulted from the inherent human penchant for suggestibility and could be cured by psychotherapy. The approach apparently succeeded in curing many cases, some long-standing. In addition, underpinning the approach, which employed reassurance and education, was an implicit trust between the doctor and patient. When the United States entered the war, the American Army's medical corps adopted the practices of the British and French, and the influences of these practices carried on after the war.

However, wartime techniques did not transition to the postwar period. The symptoms classified as hysteria were said to result from individual tendencies, both constitutional and developed as part of an aberrant psychological history. Many still viewed hysteria as cowardice or a manipulative attempt to get out of harm's way. For example, in the United States, it was a cultural bias to believe that some ethnic groups were predisposed to developing these symptoms.

World War I established some important themes that affected the interpretation of psychological problems in later wars. First, common symptoms were physical, and, second, the most common treatments were both physical and psychological. Third, there seemed to be a correlation between culture and symptoms. While the medical profession came to agree that most "shell shock" cases were primarily of a psychological or physiopsychological nature, popular culture still clung to the notion of heroes and cowards. During the war, the physical component of the illness and the expression of physical symptoms were important—in some cases exhibition of only psychological symptoms could lead to execution, and postwar analysis of the 346 British soldiers executed for cowardice indicates that a substantial portion was suffering from shell shock. Thus, World War I shows war experiences interact with the beliefs of popular culture and beliefs of the medical profession.

The Interwar Years. The interwar years saw an explosion of concepts and assumptions about psychology and psychoanalysis, which contributed to explanations about why people broke down in combat and what caused their symptoms. The division of the world into the weak and the strong had a new wrinkle: Weakness stemmed from biological inferiority. This concept combined with theories of eugenics to create the notion that the population could be screened to weed out those most likely to break under the stress of combat—those with "weak" nervous systems. Freudian and other theories of psychoanalysis contributed to this theory. Some members of the groups thought to be vulnerable were so because of early life experiences. However, some of these theories also established the foundation that psychological and behavioral symptoms were

the result of mental insult, so that almost anyone could break down in combat. Some preliminary work was done toward understanding how the brain could take external signals and translate them into physical symptoms that in turn became feedback to further alter the psychological state. These efforts mark the first break of the mind-body dichotomy that had underpinned the Western view of human status and behavior.

World War II. This war began with a major emphasis on screening, both as a way of getting the most effective soldiers and of avoiding the high cost of neuropsychiatric casualties. Initially, 1.6 million men were rejected from the draft for emotional, mental, or educational disorders. Between 1942 and 1945, an additional 500,000 were separated from the Army on psychiatric or behavioral grounds.

As a means of avoiding psychological casualties, screening failed abysmally. The United States suffered one diagnosed psychiatric casualty for every four wounded. The first major engagements—Guadalcanal and the Kasserine Pass in Africa—made it clear that the United States could expect many psychiatric casualties. Forty percent of the casualties evacuated from Guadalcanal suffered from disabling mental problems. Psychiatric casualties from the battle at the Kasserine Pass almost equaled the killed and wounded.

In the face of such numbers, faith in the effectiveness of screening evaporated, and the lessons of World War I were restudied. The criticality of the group in maintaining a soldier's mental health, buffering him from both the stress of the battlefield and from the home front, was rediscovered. It had even more import in World War II because the decisions of a small group of people—in particular, sergeants, lieutenants, and captains—had more influence over a soldier's fate than at any time in the past.

World War II marked a sea change in how the relationship between combat stress and the individual was viewed. The belief in vulnerability based on constitutional and inherited factors moved to one based primarily on environmental determinants. True, some men carried psychic wounds from their pasts that made them particularly vulnerable. However, most men were seen as about equally capable of bearing the stresses of war, and, in kind, each was at risk of being stressed to the point of breakdown.

Post–World War II Conceptual Developments. The post–World War II period[1] saw several important developments. One was the development and use of psychotropic medications to treat psychiatric disorders. But the disease-based

[1]Defined here as the period between the end of World War II and the early 1960s. From the point of view of conceptual development, the Korean War is largely an extension of World War II and is not treated here separately.

model on which the use of these medications rested (define symptom, identify pathogen, prescribe medication) was found not to work well when multiple causes were involved. The focus shifted to the interactions between the individual and the environment, a synthesis that led to the concept of stress as we understand it today. This concept in turn caused a break with psychoanalytically based medicine, which saw many symptoms as psychosomatic, developed in early childhood as a result of intra-familial relationships. According to psychoanalytic theory, diseases such as asthma, dermatitis, and hypertension were classified as psychosomatic and correlated with a specific emotional conflict. However, if symptoms really stem from a complex interaction between an individual and the environment, the concept of specific cause does not hold.

But if psychosomatic illnesses did not cause a patient's symptoms, what did? Exploring potential answers to that question cleared the path to contemporary concepts of stress. It had become apparent that the symptoms that brought veterans into hospitals during and after World War II were not simply in their minds. Investigators began to examine the relationship between stress and disease. One path of this investigative effort explored the dichotomy between a soldier's reactions to combat and what he thought that reaction should be. When they differed widely, the struggle to reconcile the two could damage the individual. Another path led to the realm of psychoendocrinology.

Other concepts emerged. B. F. Skinner developed the theory of operant conditioning. While this theory never enjoyed wide acceptance in the medical community, it did reinforce many of the constructs developed during World War II. Individual response was a matter of the kinds of reinforcements received, not complex interactions between the brain, nervous system, and environment (as we now believe). Epidemiological studies fusing psychiatry, medical sociology and anthropology examined the role of culture and other issues in producing symptoms. Another theory held that social support was the primary buffer against stress. Yet another examined the role of events in life as a way of predisposing people to physical and mental illness.

The Vietnam Conflict. An understanding of Vietnam is essential to analysis of the Gulf War. The Vietnam conflict illuminated the power of cultural influences, military organizational behavior, and values and beliefs. It also initiated the idea that wars can provide unique causes for mental illnesses.

Vietnam was an unusual war. First, it had distinct phases, ranging from an insurgency alone in its early years, to an insurgency and a conventional war in its mid-period, to conventional war at its end. Thus, the nature of the war an individual experienced depended on when he or she was there. Second, soldiers did not fight for the duration, as they did in World War II. The tour was limited to one year at a time, and soldiers knew exactly when they were going home. Nor

was the combat continuous while they were there. It was characterized by relatively short operations that could involve intense combat followed by a return to a sanctuary in the form of a base camp.

There are two puzzling aspects of the war with respect to the number of stress casualties. Few of them presented during the war. Even when combat was intense, as it was in the Ia Drang valley and at Khe Sanh, reported casualties were low in comparison with those of World War II and Korea. The bulk appeared after the war. Perhaps even more puzzling, there appeared to be no connection between the level of combat and the number of casualties reported. Combat stress casualties were the lowest for the years with the most intense combat, and the greatest increase in psychiatric and stress problems occurred when involvement in combat became less intense. In fact, the greatest increase took place among returned veterans who served during the period of the least combat.

If the trauma of combat did not cause the problems, then what did? A variety of causes have been considered. Some suggest that the rotation system shattered the normal bonds of small unit cohesion, depriving soldiers of the support needed for good mental health. Others cite the abbreviated command tours of battalion and company commanders. Units commanded by inexperienced commanders suffered greater casualties, and soldiers saw as many as three commanders in a year, each new arrival creating yet another stress-filled transition. The one-year tour may also have been a source of problems, possibly creating a "short-timer" mentality toward the end of the tour, which had also been noted in the Korean War. Some cite widespread drug use as a contributor to stress.

Another possible explanation is the nature of the homecoming the veterans received. Instead of returning home with their units and victorious in a noble cause, the veterans came home singly to a divided and often critical nation. Would-be employers were often suspicious, and fellow students were often hostile. Unquestionably, many veterans found their homecoming an unpleasant and stressful surprise.

The two causes most generally cited are posttraumatic stress disorder (PTSD) and herbicides, particularly Agent Orange. A widely circulated number for PTSD casualties is one million of the 2.5 million who served there, and about 15 percent of the total serving in combat roles. At least one PTSD model assumes that Vietnam was a holocaust-like experience with soldiers engaging in dehumanizing behavior fueled by racism and suffering the psychic consequences after their return home. From an epidemiological perspective, the argument is suspect since much of the evidence is drawn from a self-selected group of antiwar veterans. Furthermore, focusing on trauma to the exclusion of other stressful

influences is a problem. The high proportion of Vietnam veterans reporting the syndrome (about one-third) might make sense if the level of combat for all involved had been parallel to that of the heavy fighting of World War II. But it was not, and many of those reporting PTSD symptoms were support personnel who were far removed from the fighting.

Considerable research has occurred since the decade following the Vietnam conflict, with nearly 3,000 articles having been published on the topic. Following World War II, the main concern of military psychiatrists was for those soldiers whose symptoms became fixed in a chronic state of anxiety and who were assumed to be reacting to fear, danger, and cataclysmic events. What received less attention from subsequent generations was the finding that those who developed symptoms had strong biases to do so as a result of preexisting psychological problems.

It is not surprising, then, that the initial focus of concern following Vietnam fell on external causes. The dominant focus was on a set of sociopolitical perceptions about the nature of the war, and this focus reflected in the characteristics of PTSD as listed in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM III—American Psychiatric Association, 1980). Its distinguishing characteristic was exposure to an event defined as being outside normal human experience. Symptoms included recurrent intrusive memories of the event, recurrent dreams or flashbacks, numbed responsiveness to the external world, exaggerated startle response, sleep disturbance, memory loss, and difficulty concentrating.

However, as time passed, it became clear that not all those exposed to traumatic events developed PTSD or responded in the same way. Thus, researchers began to break with what might be called "universalistic" thinking, which tied PTSD symptoms solely to combat exposure. Further research led to the development of additional assessment instruments, such as the Impact of Events scale, which was widely used in epidemiological studies attempting to assess the prevalence of PTSD in populations. Further, patients with PTSD were noted to display an array of physiological symptoms, such as higher reactivity and hormonal changes. Also, some began to question whether exposure to a traumatic event was sufficient by itself to cause PTSD.

This later work influenced the revision of the diagnostic criteria for the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM IV—American Psychiatric Association, 1994). The changes included moving away from viewing a traumatic event as a cause to viewing an interaction among classes of events and individual responses to them as causes. Thus, DSM IV moves toward a more selective diagnosis of PTSD, albeit one still based on many criteria that are subjective. However, the research has evolved in an in-

tensive and rigorous fashion, with researchers focusing on neurobiology. Some current research appears to indicate that neurobiological differences best explain the differences between those who suffer from PTSD and those who do not. These neurobiological differences also raise the possibility of predisposition for an abnormal response to a traumatic event.

The second cause most generally cited for the symptoms of these soldiers is exposure to herbicides, particularly Agent Orange. Vietnam veterans report significantly more health problems than do nonveterans, and the problems increase with the perceived exposure to Agent Orange. However, it is unlikely that one chemical (dioxin) could cause the wide range of symptoms reported, and the symptoms cannot be epidemiologically verified as having a unique cause. Physical examination of exposed and control groups revealed no differences.

The absence of a clear causal link for the problems experienced by some of the veterans of Vietnam raises the possibility of postcombat "belief, expectation, explanation, and attribution." Participation in Vietnam caused veterans to see themselves and to be seen as a population subjected to environmental stresses and suffering from a host of psychological and psychophysiological symptoms. The public view of and responses to them increased their stress, exacerbating whatever problems may have already existed.

The Gulf War. Like the Vietnam conflict, the Gulf War presents a conundrum. The war was short and casualties light. Few stress-related cases were diagnosed *during* the war. Yet, following the conflict, thousands of soldiers reported a range of problems, many of which included symptoms typical of stress-induced injuries. The nature of the combat led many to conclude that participants did not experience much stress. However, a number of influences stressed Gulf War participants (see Marshall, Davis, and Sherbourne, 1999).

Veterans experienced stress before combat operations began and during them. The sources of precombat stress were many; some of the most significant included the deployment itself, the indeterminate length of the conflict, the isolated yet crowded living conditions, and the anticipation of combat.

Deployment occurred quickly and in anticipation of major conflict. So families were separated on short notice and with the expectation that the military members were gearing up to fight major battles. It was unknown how long the deployment would last. Not knowing was more stressful than a long commitment with a specific end. As in previous wars, the stress of deployment was exacerbated by concerns about the families left behind and their ability to cope with both the normal problems of everyday life and those created by the separation. These influences were greater for members of the Reserve Components who had the additional concern of interrupted jobs and careers and potential loss of employment as a result of military service. The troops deployed into desolate

parts of Saudi Arabia, where they were isolated from the population that they had come to defend. Living quarters were crowded, offering no chance for privacy. Furthermore, troops believed they were facing a formidable enemy, equipped with weapons the technological equal of their own and "battle hardened" by an extended conflict with Iran.

The beginning of the air war added yet more sources of stress. Scud missiles, potentially loaded with chemical agents, were an omnipresent threat. One survey indicated that almost two-thirds of the respondents saw chemical weapons as a source of quite a bit or extreme stress. Interestingly enough, a main source of perceived stress was the taking of "untried, experimental drugs," by which was meant vaccines and pyridostigmine bromide (PB). The latter was administered to help counter the effects of a nerve agent it was believed the Iraqis had. Of course, actual combat produced its own source of stress, with concern over losing friends and being subject to ground and artillery attacks.

Return from the Gulf and Its Consequences. For most, the return from the Gulf was a relief, and their stress declined. However, this was not true for everyone. Soldiers who reported high levels of symptoms before combat tended to report high levels after as well. That is, the more intense the response to the chronic stress generated by deployment and attendant conditions, the more intense the response to the combat and postcombat periods. And soldiers who had been exposed to high levels of combat appeared to have increased risk of various symptoms.

In addition, returning from the Gulf generated its own set of stresses. Gulf War veterans did not experience the rejection and hostility that Vietnam veterans did, but returning was still accompanied by the stress normally found when reintegrating families. Furthermore, unit workload was high, because of or due to accomplishing deferred maintenance and carrying out new training. In addition, the Army had entered a period of substantial reduction, creating concerns over careers and employment.

It is noteworthy that the portion of soldiers who were dissatisfied with the support provided to their families did not change much from the prewar to the postwar period. A lack of trust in the Army's ability to care for families was a cause for concern for many soldiers, and that same concern existed at their return.

Thus, it is clear that a variety of sources were affecting soldiers, not just the deployment and combat. An analysis of surveys of soldiers from U.S. VII Corps both six and nine months after the war showed that five stress factors accounted for about 40 percent of the variance in mean scores of indexes designed to measure stress. In descending order of significance, these are

- unit/workplace climate
- Operation Desert Storm–related issues
- reassignment and movement
- downsizing issues
- family issues.

Analysis of the data generated by a series of surveys administered after the war indicates that about 10 percent of the Gulf War veteran population regarded itself as subject to significant stress and as having difficulty coping with it. This stress was compounded by their experiences in the Gulf and since their return. Follow-up surveys show that 10–15 percent of the populations surveyed believe they carry negative life consequences as a result of their participation in the Gulf War.

These data provide no indication of veterans' physical symptoms. However, limited but indicative studies conducted three years after the war show that Gulf veterans, active and reserve, report about twice as many symptoms as those who did not deploy, went to Germany, or served in the continental United States.

CONCLUSIONS

This report argues that the stress of combat or simple deployment can have immediate and long-term physical and psychological consequences. These consequences are similar throughout the history of warfare even though the nature of warfare has changed dramatically. Stress is likely to affect[2] and be affected[3] by many factors synergistically, implicitly leading to the conclusion that it is unlikely that a single independent cause exists for the undiagnosed symptoms of some Gulf War veterans.

But our society and culture produce powerful inducements to identify a single cause for the range of symptoms that remain undiagnosed in some Gulf War veterans. A "good" person should have good health, society admonishes, and if that person's health is bad, the cause must be external. Additionally, if medical science can identify a cause, it can find a cure. Thus simply identifying a problem's source can eliminate it.

[2]For instance, some studies find that stress enables PB to pass through the blood-brain barrier.

[3]Use of, or even fear of use of, chemical weapons may greatly increase stress among troops.

However, this report argues that the search for a single cause of undiagnosed illness is simplistic and, ultimately, doomed to fail. Regarding stress-related illness, a series of complex and interacting factors are the most likely source of symptoms. The presentation of psychological pain in the form of physical symptoms is a common event, far more widespread than many realize. Moreover, the undiagnosed illnesses suffered by Gulf War veterans may have been influenced by society and culture, which in turn may have shaped veterans' interpretation of their symptoms. Other factors of influence include the media, the Internet, friends, various authorities, and support groups.

This is not to argue that the symptoms are not real and do not require treatment. No illness is "all in the mind"—external events can generate a wide array of physical responses. Humans are open systems. External events evoke responses in the brain and the endocrine and immune systems that affect body physiology and alter it, producing changes and symptoms. While it would oversimplify to assert that stress has caused Gulf War illnesses, stress is clearly a contributing factor in many psychological and somatic symptoms. For example, it could have rendered soldiers more vulnerable to environmental pathogens.

Therefore, the undiagnosed symptoms of some Gulf War veterans could represent a complex intertwining of the many factors discussed here and others that could be adduced. Some of the reported illnesses share the same causes that have affected soldiers throughout the history of warfare. To provide veterans suffering from these symptoms with the most help possible, the issue of complexity must be addressed and not simply abandoned searching for a single cause.

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Chapter One

INTRODUCTION

The central theme of this report may be summarized simply: The stresses of combat, deployment, or high threat environments can, for some military personnel, have both immediate and long-term disruptive physical and psychological consequences. Such consequences have been observed, documented, and pondered over at many points in human history and in many societies, cultures, and military organizations. For the majority of those afflicted, the symptoms experienced have been both psychological and physical. The relationship between these two categories of symptoms appears to have always been complex, with each symptom class probably contributing to the intensity of the other.

While some symptoms of combat stress appear to have been common to many eras and cultures, other symptoms and symptom clusters have varied through time. Still, while clusters of physical symptoms have varied, few if any "new" or previously unremarked symptoms have appeared over time. The structure of the human body and its physiology limit the repertoire of possible symptomatic responses (except perhaps when a new and terrible pathogen is encountered). This seems to be less true of psychological and psychosocial symptoms, which can alter over time as cultural beliefs and individual imaginations change.

As symptoms of combat stress have varied, so have the proposed causes of stress. In addition, there appears to be a relationship between the kind of symptoms exhibited and the causes to which they are attributed. Such changes in attribution of causality have obvious bases. Beliefs about the cause of symptoms are rooted in available knowledge, the assertions of the medical system of the time, and cultural assumptions about causality, danger, and risk (see, e.g., Douglas, 1984 and 1994; Douglas and Wildavsky, 1982).

As knowledge and assumptions in each of the domains of human understanding change, we see presumptions of causality change; it would appear that some of the symptoms change as well. It has been, unfortunately, all too common for some to assign causality to generic and presumably universal catch-

alls,[1] and most common postcombat and postdeployment symptomatic clusters have been and continue to be attributed to such ambiguous phrases as "the horrors of war," "dehumanizing experiences of having been in the military" and similar, vague causal categories. In the past (and in some contemporary nonliterate cultures), causality has also been attributed to such categories as magic spells, the anger of the gods, etc. It was also common, particularly in the West, to attribute symptomatic combat responses to the moral or constitutional weakness of those suffering from them, rather than to specific combat experiences.

Throughout much of the human record, popular and medico/scientific views of causality have been reasonably, if not completely, correlated. Both appear to have been drawn from like sets of cultural assumptions. However, in the last 30 years, I believe we have seen a widespread fragmentation about the causes of postcombat symptoms. The proposed causes are manifold, wide-ranging, and often disparate. Some are certainly derived from the progress of medicine during the past 50 years and the consequent awareness of the threats posed by previously unknown pathogens (including slow viruses and prions). These threats are seen by many in the West as lurking in alien non-Western environments. Another, expanding set of constructs and beliefs both within segments of the medical community and popular culture has been the attribution of exceptionally deleterious effects of man-made toxins released into the environment. In some cases apprehensions are well founded, in others little or no scientific evidence to support widespread fears can be found. Other sources of belief about causality today include suspicion that government institutions are using uninformed populations as guinea pigs in covert experimentation. Tabloid journalism, radio and television talk shows, and Internet web pages reinforce such beliefs. Many of these paranoid and quasi-paranoid beliefs are reinforced consciously or unconsciously by political partisans, who see such consequences of combat as necessary moral outcomes or as statements about the morality or competence of a government. Another major contributing factor arises out of a tendency, on the part of at least some in the medical and scientific communities, to seek causality exclusively within their own fields of specialization or interest.

Trying to deal then, with the issues involved in the psychological and psychophysiological consequences of combat and deployment is not an easy matter. These issues are contentious, and sometimes rouse fierce partisanship. I

[1]This has been true of sophisticated scientists and physicians as well as lay persons. In the recent scientific literature, for example, van der Kolk and his colleagues' approach to the experience of a traumatic stressor and the generation of future posttraumatic stress disorder is one such example of extreme limitation of possible contributing causal factors combined with a presumed universal pattern of response (van der Kolk et al., 1996).

have chosen to use historical illustrations to try to provide a context for the present situation in order to help us better understand how stress can be considered to have contributed to Gulf War illnesses. Stress has been considered by almost every scientific committee that has held hearings on the issue of Gulf War illnesses (e.g., the Lederberg Committee, the Institute of Medicine, the National Institutes of Health Workshop, the Armed Forces Epidemiological Board, and the Presidential Special Oversight Committee).

What I try to do in this report is to demonstrate, in a general way, the interactions between medical beliefs, popular beliefs, and other aspects of cultural knowledge that appear to contribute to symptom patterns. I focus on symptomatic patterns of presentations of illness as defined in medical anthropology and medical sociology, as opposed to disease in the classical medical model. The medical or disease model focuses on the specific effects produced by a pathogen or pathophysiological process that lead to deviation from normal functioning as defined by biomedical measures. Illness is a cultural construct that refers to the way the individual organizes symptoms and feelings into a patterned whole, interprets it, assigns it a probable cause, and presents it to others. I use pieces of the historic past to illuminate patterns and changes in stress-related human and military experience and to provide a framework for the present. I am not attempting to write a comprehensive history of the role of stress and its consequences and treatment in military medicine through history; that would be a task of the utmost importance, and I hope that it will be undertaken with the detail and thoughtfulness that it requires. The historical segments I have chosen should be viewed as illustrative cases, not as definitive and exhaustive historical reconstruction.

My quest has been to elucidate a pattern in stress response. I believe that pattern has been continually present and shaped many of the responses we have seen and still see today. I believe that this is so, even though warfare has evolved and changed. What has not changed are the profound interactions between mind and body, which I believe serve as major contributing factors in the illnesses produced. The noted neurologist and neuroscientist Antonio Damasio, who has elegantly laid out how the brain transforms external events into internal neurophysiological events, has best described the model I follow (Damasio, 1994). The consequences of events experienced in combat and related deployments are never, I believe, "all in the mind"; they are transformed into potentially harmful events in the body as well. While not all soldiers appear to be vulnerable or at risk, vulnerability has little to do with bravery or the effective performance of the soldier's duty. As several studies during World War II pointed out, men who suffered combat fatigue won proportionally just as many decorations for valor as did those who suffered physical wounds.

The Gulf War has been no exception to past combat and deployment, producing both psychological and physiological postcombat symptomatic responses. A number of casualties of the Gulf War have presented various physical, psychophysical, and psychological symptoms. Many of these share in the symptom experience of so-called "Gulf War syndrome." Given the diversity of symptoms and illness presentations, the term "Gulf War illnesses" may be more appropriate (as used by the Presidential Committee on Gulf War Illnesses).

The proportion of malingerers among American military personnel in this century has been very low. Indeed, few of the casualties of the Gulf War appear to have consciously exaggerated their symptoms in hope of compensation, a common insult of the motives attributed to ex-service personnel. Almost all casualties have been described as people deeply concerned by the messages of their minds and bodies that have led them to consider that something untoward happened to them in the Persian Gulf.

Many of those afflicted with Gulf War illnesses, as well as many other Americans, apparently have come to the conclusion that Gulf War illnesses are "singular," representing some sort of new and unique phenomenon. This has been true of some in the media, a segment of the medical establishment, and various others. Those who see Gulf War illnesses and their causes as singular believe them to be a spectrum of symptoms and ailments that has sprung *de novo* from some truly unique exposure that took place in the course of Operation Desert Shield/Desert Storm.

This concept of singularity might well have been predictable, given its invocation after the Vietnam conflict to explain several categories of postcombat casualties, as well as the widespread presently popular views about disease causation and treatment. The latter seems to focus upon the existence of a unique pathogen, which implies that there is, or will be, a single cure. It is, in some senses, of great interest that these views coexist with an equally widespread view that stress is a major contributor to many human ills. Yet in an act of cultural compartmentalization, many who hold to the view of singularity deny the possible contributions of stress to these symptoms and discomfort in one aspect of life while affirming it in others.

The Vietnam conflict and its postwar developments led to massive numbers of men asserting that they suffer from posttraumatic stress disorder and/or physical and psychophysiological symptoms presumed to be a result of Agent Orange exposure. This cultural perception may have precipitated Gulf War illnesses' presumed singularity. Such singular attributions were not a major phenomenon after World War II, our bloodiest and most extensive conflict in this century. Attribution of postwar symptoms to toxic gases after World War I ("gas

neurosis") was solidly based in the real and widespread use of such agents by both the Central Powers and the Allies.

Postcombat casualties after Vietnam were perceived by many as victims of certain singular characteristics of that war. This model, presenting a given war as having unique characteristics capable of causing specific illnesses, dominated much of the dialogue and debate over the consequences of Vietnam for our troops. We shall see that Vietnam, like the Gulf War, was certainly not singular in terms of the causes that generated either wartime or postwar psychological or psychophysiological casualties. I assert that the image of unique causation and casualty type is not empirically grounded, but is in good part a function of various sociocultural, ideological, and politically inspired views of the war. I see Vietnam as part of the long continuum of the human damage done by war, and I see the post-Vietnam experience as a source for the kind of model of the singular event often invoked by many to explain the symptoms presented by some returnees from the Gulf.

Thus, to understand factors in Operations Desert Shield and Storm and its aftermath that contributed to the creation of the painful symptoms of Gulf War illnesses, it is important to move beyond the assumed singularity of events in the Gulf. We must look at historical examples that can help elucidate the pat terns of response to participation in war and dangerous and stressful deployments. While deployment to combat is not the sole cause of such patterns of response, they are seen in civil society following exposure to trauma and significantly stressful life situations such as bereavement. However, this report shall stay with the central theme of combat and deployment.

It becomes apparent as the record is studied that significant elements contributing to these illnesses are those that we, today, classify as stress and stress response. But such classification is a simplification and an abstraction. The illnesses are the result of the interactions of elements in a multifactorial matrix. This matrix includes the following as major factors, among others:

- the biological substrate and unique psychological history of the individual
- the experiences and events of the campaign
- the cultural and cognitive screen through which these events are interpreted
- belief systems about causality and the dominant etiological paradigms provided by the medical system of the time
- beliefs about biological and psychological outcome processes.

These are the factors I focus on throughout this report. An overarching concern is the role played by cultural differences among the surveyed historical periods in shaping the illness responses that are perceived. Here again I must emphasize that illness is used in the technical sense developed in medical sociology and medical anthropology: "subjective experiences of physical or emotional changes and confirmation of these changes by other people . . . both largely determined by socio-cultural factors" (Helman, 1994, p. 110).

Chapter Two

HISTORICAL OVERVIEW: PSYCHOLOGICAL CONSEQUENCES OF BATTLE STRESS

THE CLASSICAL WORLD

The important conclusion to be drawn from the classical world regarding combat events is that they (i.e., killing and wounding) are not the only events with the power to create profound alteration of behavior. Their weight and power is embedded in the cultural ascriptions that provide them with value, as are related noncombat events that may contribute to the undoing of the soldier. In this context, in classical Greece, murder was considered to be ritually polluting, defiling both the hands and the mind, and required religious rites of purification, but slaying enemies and even accidentally killing friends in battle brought no such onus with it (Vernant, 1990).

One of the most significant parts of battle and warfare has always been the creation of conditions designed to psychologically overwhelm the enemy. In *The Western Way of War*, Hanson (1989) points out that one of the primary weapons of the Greek phalanx was the terror it evoked through its synchronized movement and sound. One aim of the phalanx was to break the enemy psychologically.[1] History often focuses upon the effects of weaponry without recognizing that warfare's main weapon is the creation of overwhelming destruction that destroys the enemy's capacity to maintain organized behavior.

Even in classical Greece there were attempts to find answers that might explicate the sources of the power of war to alter behavior. It is first important to understand that Greece was a warrior society and all citizens of the *polis* served as the city's military force. Hanson has pointed out that the Greek heavy infantry were tough small-holding farmers who from youth through middle age served as the soldiers of the phalanx. Because they had to rely on each other to main-

[1]Breaking the enemy was the aim of all organizational and tactical innovations that characterized the world of the set-piece determinative battle, which did not really end until the American Civil War.

tain the unbroken ranks of the phalanx to ensure their survival, the sanctions against withdrawing from one's part in battle were extraordinary (Hanson, 1995). Burkert (1985) points out that the ceremonies and rites before a battle, in which the battle was dedicated to the God of the *polis*, served functionally to prevent withdrawal from battle. Dedication to a God sacralized the battle; thus withdrawal could be characterized as sacrilege for which the penalty was to be stoned to death. The psychological efficacy of a sure and greater penalty for not facing the enemy than the risks of battle is well known and was routinely used by armies through the first quarter of this century to ensure that soldiers stayed at task and performed.

Looking at this phenomenon, Euripides (trans., 1971, p. 27) tried to frame an answer to it in *The Bacchae,* in one of the speeches of Teiresias, the great seer, as he describes the attributes of Dionysus:

> Somewhat of Ares' dues he shares withal:
> Hosts harness-clad, in ranks arrayed, sometimes
> Are thrilled with panic ere a spear be touched;
> This too is a frenzy Dionysus sends.

This is at heart an attempt to deal with one of the basic conundrums of battle: the transition from an organized trained body of warriors into a panic-stricken mob. Thucydides (trans., 1996, p. 345) gives a number of examples of such sudden and overwhelming breakdowns of behavior. One of the most telling is in his description of the battle of Mantinea:

> The three hundred knights, as they are called, fought round King Agis, and fell on the older men of the Argives and on the five companies so named and on the Cleoneans, the Orneans, and the Athenians next them, and instantly routed them; the greater number not even waiting to strike a blow, but giving way the moment that they came on, some even being trodden under foot, in their fear of being overtaken by their assailants.

An older tradition ascribes to Zeus the capacity to spread panic and to "freeze" behavior (see Detienne and Vernant, 1978). This power of the Aegis (the shield bearing the representation of the Gorgon and borne by Zeus' daughter Athena) is referred to in the *Iliad* as far greater than that of Zeus' thunderbolts and greater than spear, sword, or arrow. Such assertions demonstrate both appreciation and respect for the proximate psychological power of combat to alter human behavior.

The Greeks also attempted to deal with the problem of postbattle breakdown or severe behavioral change. This was particularly true when dealing with the failure of a heroic warrior to behave in accordance with the sanctioning ideal of *arete*, that combination of strength, warlike valor, and courage that was central to the character of the aristocrat-warrior. Combat alone was not culturally de-

fined as a powerful enough stimulus to undo the capacity of the warrior to behave in terms of the normal expectations of his calling and his status. Such power was allocated to events between battles (as in the case of Achilles in the *Iliad*) or after the final battle was over (as in the case of Ajax). While contemporary psychological thought would probably attribute such breakdowns to episodes of trauma and loss of friends, the Greeks attributed causality to loss or undermining of honor and status. For example, when Achilles withdrew from effective combat behavior, sulking in his tent, he contradicted his status as a warrior and his choice of a short life of heroic deeds and fame as opposed to a long, quieter one.

For both Achilles and Ajax, the precipitant of their postbattle breakdowns was the profound shame of being dishonored and deprived of the proper and earned rewards of valor. For Achilles dishonor was in Agamemnon's taking of Briseis, and for Ajax the award of Achilles' armor to Odysseus. For each, the trauma was the undermining and dishonoring of his *arete*.[2] There is illumination of the totality of Ajax's breakdown in the lines spoken by the chorus:

> And as a companion I must reckon with Ajax, difficult to tend, alas, living with a god-sent madness. In the past you sent him forth mighty in his valiant strength; but now he shepherds lonely thoughts, and has found deep mourning for his friends. And the deeds of greatest valor done earlier by his hands have been let drop, having won no friendship from men incapable of friendship, the miserable sons of Atreus (Sophocles, trans., 1994, p. 89).

It is made plain by the chorus that Ajax's postcombat breakdown is not perceived as transient:

> Yes, he who suffers a hopeless sickness is better when he lies in Hades; he who in respect of his lineage was the noblest of the much enduring Acheaens stands no longer firm in the temper he grew up in, but lives outside it (Sophocles, trans., 1994, p. 89).

It is noteworthy that the Greeks attributed the cause of this breakdown to a postcombat event: the degradation of honor is the stressor that undoes both Achilles and Ajax. In a sense, the event is one that, in our terms, delegitimates both the traumas of loss and combat experiences. This modern concept is one that we shall return to later.

In sum, the overwhelming psychological power of combat to alter human behavior and to overwhelm "normalcy" was recognized in the ancient world, as

[2]As Whitman (1971) put it: "Ajax is the first full length portrait of a tragic hero in Western Literature, and it is by no mere coincidence that both he and Achilles, the first epic hero, find themselves in identical situations. Both isolate and destroy themselves in the struggle with their own offended honor." (See also Shay, 1994.)

were the possibilities for significant postcombat changes in the warrior. While the Hippocratic medical tradition attempted to explain mental illness, madness, and aberrant behavior in naturalistic terms it was limited by a severe lack of knowledge. Humoral changes, driven internally or by external agents as diverse as climate or political or social situation were invoked.[3] Powerful natural and supernatural events that affected humans were perceived, marked, and written about, but their effects on human behavior was not understood.

A More Recent Culture Illuminates Perspectives from the Classical World

Cultural perspectives from some of my prior fieldwork may help to illuminate these points and to reinforce that it is wrong to impute contemporary American or Western middle-class evaluations of the effects of combat and violence to warrior societies of any type or, indeed, to our own past. A society's approach to trauma, violence, and death is a complex outcome of many factors, including the valuation of the "way of the warrior"; the culture's belief systems and eschatological notions, particularly about the afterlife; and its sources of status, guilt, and shame.

In my work during the 1950s with the Barsana, a warrior society and a lineage of the Hawiya Clan Confederacy of central Somalia, I encountered a social and value system close to that of the time of the *Iliad.* The war leader of the lineage, a wise and gentle man, claimed to have killed well over three hundred men in combat with spear and knife—an assertion vouched for by many of his contemporaries. I found him to be a thoughtful counselor and a voice of prudence and judiciousness. He could describe with immense pleasure slashing open a pregnant woman and killing her unborn child pointing out that, "It could not then in the future kill one of my children or grandchildren when it was grown." Such an act was perceived as neither brutal nor horrific but as fulfilling an obligation of the warrior to his kin (Marlowe, 1963a and b). A warrior who did not perform to these levels of expectation would incur public shame and the potential withdrawal of critical societal privileges. Thus when a *causus belli* was perceived, social insistence upon recourse to battle was great.[4]

[3]This issue has been cogently dealt with by G.E.R. Lloyd (Lloyd, 1987).

[4]In one instance that I observed, young women of the nomadic section involved lined up to sing mocking songs. The gist of the lyrics was that if the young men did not sharpen their spears and seek blood vengeance, the women, many of whom were their wives, would be sealed against them as possible sexual partners. However, a possible *causus belli* that took place between kin groups too close for the allowableness of warfare was rejected as such by the lineage elders as a forbidden taking of blood that would be an abomination (Marlowe, 1963a and b).

The power of shame can also be directed against the enemy to humiliate him, disrupt his sense of competency, and injure his morale. A Somali analog to an event in the *Iliad* (and one undoubtedly carried out for many of the same inherent reasons) was the dragging of the corpses of American Rangers through the streets of Mogadishu, a direct parallel to Achilles' humiliation of the corpse of Hector. Such events lead to another range of stressful sources for a deployed force: "culture shock." Just as Priam was emotionally distraught (and in contemporary terms, deeply stressed) by Achilles' violations of the expected rules for respect of the dead, so were Americans stressed and shocked by the Somali disregard for sacralization of our dead.

The Relation Between Group Cohesion and Soldier Sustainment

From classical times until the French Revolution, a soldier's psychological and physical survival depended upon the physical cohesion of the line of battle. The line was his armor, both physically and psychologically. In the phalanx or the legion, the soldier knew that he was essentially "safe" in combat as long as the men to his right and left kept the line intact, as the shield of each covered the man next to him. "Line" in this sense includes the maintenance of the physical integrity of square or column. True danger came when the line was broken and all were vulnerable. At that point it was legitimate to run—to be overwhelmed by fear and to try to survive. The organic cohesion of the line maintained behavior and sustained the soldier's performance and perhaps also his mental health. The alternative was panic, defeat, and often death. Therefore, maintaining the cohesion of the battle line was extremely important.[5] It was then and is now critical that, if men are to survive the terrors of war and the hardships of deployment, they must be tightly bonded together. The group, with which the soldier lived and worked, was the primary source of social support and psychological strength.

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[5]Sun-tzu (trans. 1963) enjoins commanders to always place men from the same town or neighborhood in the line together because they will not leave or desert each other. The Macedonian phalanxes were composed of long-service soldiers, most often organized by community of origin. The Roman legionary line of battle was formed from the interlocking of small groups, the *maniples*, (hand or bundle) who lived together for the long term. The need for such bonding was expressed well by Xenophon in the *Cyropaedia,* which was written in the fourth century B.C. In describing the reasons for Cyrus to encamp his soldiers by regiments of 100 men, Xenophon (trans., 1992, p. 52) states:

> The living in common would help the men to know each other, and it is only by such knowledge, as a rule, that a common conscience is engendered; those who live apart, unknowing and unknown, seem far more apt for mischief, like those who skulk in the dark. Cyrus thought the common life would lead to the happiest results in the discipline of the regiments . . . . And finally, he felt, there was the fact that those who live together are the less likely to desert one another; even the wild animals, Cyrus knew, who are reared together suffer terribly from loneliness when they are severed from each other.

The Importance of the Leader

Another cohesive factor for sustaining the soldier in the psychosocial climate of his unit is good leadership. Leaders who combine tactical knowledge and skill with the ability to take care of their troops ensure the best possible available conditions for them. These leaders are perceived as respecting soldiers and their needs and are not seen as wasteful of life in battle. These principles have not changed from ancient times to today.

WESTERN VALUES REGARDING BEHAVIOR DURING AND FOLLOWING COMBAT

The history of the psychological consequences of warfare for most of the next two thousand years in the West appears to be one of decoupling perceived combat effects from combat itself. If men broke in combat or suffered psychologically afterwards, the fault lay in themselves and was not a consequence of war. This decoupling governed most thought about the consequences of combat through World War I and for the most part continues today.

It is in a conjoining of the Biblical tradition[6] with the Greek concept of *arete* that the maintenance of effective behavior during and following battle appears to shift primarily to an internal locus. A soldier was either a courageous man or a coward.[7] The issue is not one of disregarding the battlefield's potential psychological or behavioral injury but rather allocation of etiological factors to behavioral failure. That men might fail had been accepted throughout classical times and appears to have been central to the evolution of disciplinary techniques, tactical formations, and increasing emphasis upon the organic cohesion of the combat group. Delbruck (1990) summed this up very well, discussing the switch from the tactics of the Greek and Macedonian phalanx (in which the organic mass maintained the behavior of the whole or broke as a whole) to Roman Legionary tactics and the development of cohort tactics (based upon mutually supporting small groups rather than the mass).[8]

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[6]This is perhaps best expressed in the book of Joshua (verse 1, line 9), "Have I not commanded you? Be strong and of good courage; be not frightened, neither be dismayed; for the Lord, your God, is with you wherever you go."

[7]These began to be perceived as inborn characteristics of both individuals and of racial and ethnic groups.

[8]But to establish in the place of one large mass a number of small groups that could compensate for their weakness by helping each other mutually, there was needed a new power, military discipline, which bound a number of individual fighters into a unit spiritually stronger than the sum of its parts, controlled by *one* will, standing fast so that even the soul-shaking excitement, the melee, the noise, the fear, the danger of death in the battle—none of these things could break it up. The cohort remained firmly under the control of its leader, and the leaders followed the orders of the army commander.

Contamine (1986, pp. 250–259) has pointed out the critical role that the concept of courage played in the Middle Ages; it was a "necessary" trait that characterized the warrior aristocracy. He traces its importance and saliency from both the classical world and major Christian thinkers, particularly Aquinas and Saints Ambrose and Augustine. Contamine also points out that

> the Swiss military code did not reserve punishment of bad soldiers to the authorities or to the high command, but authorized everyone to strike his nearest companion dead if he was fleeing or spreading panic.

With respect to combat and war, we see a consistent general shift away from the acceptance of the psychological power of war to alter behavior and long-term mental states for most soldiers to a simpler division between those with "courage" and those without it. While fear is acknowledged, the responses to it appear to shift into the generalized categories of the courageous and strong compared with the cowardly and weak, as opposed to the perception of those with strong nerves versus those with weak nerves. This, to a degree, shifted the issue from a physical and constitutional metaphor to a moral one. The primary question then as to why human beings break down in battle or after battle (or, more subtly, demonstrate behavioral and psychological alterations) appears to have become more and more rigorously fixed in a set of simple, readily comprehensible categories, both in medicine and in general Western belief systems. Men were either cowardly or courageous. They were or were not subject to fear. They had nervous systems that would break down under any kind of strong threat or had systems that disregarded such threats. In a very real sense, the internally driven dynamic that Galen had posited in his humoral theory became the public explanation for soldierly behavior, at least in terms of public image.

MIND-BODY DECOUPLING IN THE WEST

The focus on courage and inner qualities was reinforced by the decoupling of the psychological (mind) from the physical (body), which became more and more commonplace in the West. Much of medicine and the general intellectual culture were also engaged in a fairly absolute decoupling of mind from body. This decoupling made it conceptually difficult to define how events of the mind could have serious bodily consequences. Cartesian dualism separated an abstract spiritual "mind" from the corporeal nonspiritual body. While the two met, presumably in the pineal gland, the possibilities of the impact of the one upon the other were unclear.

Hippocratic and Galenic medicine posited an interaction between the internal organization of the humoral structure and external events,[9] and the effects of strong emotional situations on both behavior and physiology continued as a critical part of medicine. However, such thinking was seldom applied to war.

While physicians in practice (see Martin, 1997) continued to deal with the impacts of event-mind-body, most possibilities of the mind-body relationship ceased to be part of formal academic discourse or theoretical speculation.[10] This differentiation was intensified by the evolving pattern of the objectification of the concept of disease and its isolation from both the life of the patient and the patient's social universe. These were, as Foucalt (1975) asserted in one of his studies that appears to maintain high validity, contaminants that interfered with true knowledge of the disease through study of *its* signs and symptoms and not its impact upon the patient's life or that life's impact upon the disease. Intriguingly Cartesian dualism and the reification of disease begin their ascent during a period in which armies were changing radically in both size and composition.[11] This also led to dramatic rises in casualty rates and in levels of lethality.

From the later middle ages until the French Revolution (1789–1799), the primary military psychiatric disability recognized was "nostalgia," which was described as a pathological form of homesickness marked by depressive and anorectic symptoms. It is noteworthy that nostalgia was believed to develop in the long periods between battles rather than as a consequence of battle. In addition, it was consistently treated as a true mental disease and not as malingering (see Rosen, 1975).

During this time period, the culture of military service in the West was markedly different from that with which we are now familiar. The aristocracy and the gentry traditionally provided officers. Soldiers were long-term volunteers in professional or mercenary forces. On average, few married until they reached higher rank, and the families of those who did marry became camp followers—part of the baggage train of the army on the move. Concern about the longer-term effects of combat, soldiering, and military life was minimal. After battle,

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[9]Primacy was shifted from one and other depending upon the case being analyzed (see Siegel, 1973).

[10]In 1649 Harvey noted:

> "and what indeed is more deserving of attention than the fact that in almost every affection, appetite, hope or fear, our body suffer, the countenance changes and the blood appears to course hither and thither" (quoted in Hunter and Macalpine, 1963).

[11]The period when the growth of armies becomes most marked is the 17th century. While field armies did not increase in size dramatically overall, military strengths did. The historical reasons for this growth are covered in Hall (1997) and appear to relate to the way in which changing technologies and tactics had shifted the primacy to the defense.

modest numbers survived their wounds, and many more died of disease. Until the 19th century, when first anesthesia and then germ-theory-based sanitation and antisepsis were introduced, life for many soldiers was fairly Hobbesian: "nasty, short, and brutish." Concepts that our culture is presently concerned about, such as freedom from aches and pains, personal and economic fulfillment, etc., were nonexistent. Life was hard and all expected to be used hard by life. If the soldier survived, he normally continued service until old age. At that time, the physical and mental health problems of soldiers were not the problems of society in general but those of the restricted and marginal social category of soldiers. Because soldiers were drawn from the poorest margins of society, the process of socialization and professionalization fairly completely alienated them from civilian life. As Hall (1997) puts it, "Once one became a soldier, there was little else one could do in this life but continue as a soldier." Adding to this military cultural picture was a high rate of desertion.[12]

The era of the French Revolution, and most particularly the development of conscription and the *levee en masse,* altered the constitution of armies and, through the instrumentality of the short-term "citizen soldier," increased societal concern about the effects of service upon the soldier. Particularly from the 17th century onward, the culture, social structure, technologies, and tactics of armies began to evolve. The major changes were development of "Napoleonic" mass armies, and the Napoleonic view that soldiers were as disposable as shot, shell, and musket ball. Concepts of soldier "psychological vulnerability" did not evolve further during this period.[13] Prior to the French Revolution, smaller professional forces made attempts to be selective and avoid the presumedly inferior. Conscription had been used, but on a small scale for all except for the Armies of Charles the IX and Gustavus Adolphus of Sweden, which, beginning in the early 17th century, attempted "universal" conscription but drew primarily on the peasantry. If Parker (1996) is correct in his assertion that "Enlistment, in effect, had become a sentence of death," combat consequences while devastating demographically to farming communities did not have much effect on society in terms of the ills of survivors. The extent of the experience was dramatically widened with the advent of mass conscription for the Revolutionary and Napoleonic Armies. Thus, the soldiering experiences of the exclusive citizenry of the small Greek city-state now became the experiences of the widely inclusive citizenry of the nation state. Most of the elements that

[12]Desertion rates were up to 2–3 percent per month during wartime in the late 16th century. "The mere report that a French army might be moved into Germany was sufficient, according to Richelieu, to reduce its strength by 50%" (Hall, 1997, p. 229).

[13]It was popular in both military and military medical circles to compare the neurologically weak and/or cowardly with the courageous and the strong nerved or "nerveless." A late 17th century British medical encyclopedia points out, particularly in reference to military service, that a significant proportion of human beings are simply constitutionally inferior.

soldiers were exposed to and that likely affected their physical and mental state remained similar: deployment far from home and family; hard and physically demanding conditions of the campaign; and the shock, chaos, and blood of battle that punctuated each campaign. In terms of mediating the experience of war for the soldier, two constructs remained stable: These two were the necessity of organizational cohesion and the role of the leader, as discussed above. We shall return to these themes as we explore the factors that mediate the psychological and psychophysiological consequences of war and deployment.

Chapter Three

MODERN WAR: THE AMERICAN CIVIL WAR

From the Civil War onward, each American war has culturally and medically defined a set of effects upon soldiers, a set of supposed causes of these effects determined by the knowledge and cultural biases of the era, and a set of symptoms appropriate to the culturally espoused values, the medical knowledge of the time, and the apprehensions about the inherent risks to which soldiers were subjected.

Most authorities would agree that the first modern war of major scale, was the American Civil War (1861–1865). Within it we also see the beginning of a massive new level of lethality as the rifled musket and the minié ball extend the effective killing range of the foot soldiers' weaponry from 50 to 100 yards to over 500 yards, five to ten times greater than that of Napoleonic warfare. During the Civil War, an appropriate scientific language to describe complex psychological and psychophysiological consequences of warfare was lacking. However, the Civil War still foreshadows the psychological consequences of 20th century warfare. Observers during the Civil War period described the spectra of symptoms that were to become common 50 years later. Caught in assumptions about bravery and cowardice and with few concepts appropriate to understanding functional illness, these observers were often more puzzled than discerning.

The problem of translation of causes to symptoms is, of course, a complex one. Today, we must do the best we can to extrapolate from descriptions of symptoms and their associations with external events. We must remember that at the time of the Civil War there was no knowledge, appropriate set of constructs, medical language, or principles to define what we today call combat stress, and the psychological and physiological sequelae that are its consequences. There were however the acute observations of symptoms that appeared to be responses to external stressful events that were medically inexplicable in the light of the knowledge of the time.

Civil War armies produced a modest number of cases of nostalgia and a greater number of nostalgia-like patterns of behavior. These cases were almost invari-

ably generated during prolonged periods of inaction between episodes of significant combat. It was consistently observed that the symptoms tended to disappear whenever troops prepared for action and left their encampments to march toward the enemy.

All combat and postcombat behavior took place in an environment of value and expectation about individual performance far closer to that of the Greeks and medieval conceptions than to those of our time. Soldiers were either brave or cowardly.[1] Thus men who, for whatever set of reasons, wished to avoid the acute stresses and traumas of combat opted out—obviously in very large numbers. While the reality does not accord with public patriotic visions or with the belief that the maximum penalty was always applied to "deserters," that there was a high desertion rate is unchallenged. This represents a continuation of the pattern described for medieval and renaissance armies, and it is remarkably different from the normative expectations that characterize "attention to duty" in most Western armies in this century (and in U.S. forces in particular). There are many reasons for this, but suffice it to say that desertion could well be a self-screening method for evading or mediating highly stressful situations that is less available to troops serving today. Because the only alternative to bravery was "cowardice," the dominant symptom expressions that legitimated withdrawal from the combat situation were physical. The cultural constructs of the time left little room for the expression of responses to the stresses of combat that were other than physical or the behavior of the truly "mad." A gross taxonomic division remained between courage and cowardice.[2] Many young officers on both sides in the Civil War, despite their knowledge of the possible medical and life-threatening consequences of wounds in an era before antiseptics, would deliberately attempt to become wounded to demonstrate that they were part of the community of brave men.

Linderman (1987, p. 7) quotes Private Carlton McCarthy of the Richmond Howitzers about the expectations for a soldier:

> "In a thousand ways he is tried . . . every quality is put to the test. If he shows the least cowardice he is undone. His courage must never fail. He must be manly and independent."

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[1]These polar concepts have been laid out exceptionally well by McPherson (1997, p. 6) who noted that:

> During the war a consensus existed that in many regiments about half of the men did most of the real fighting. The rest were known, in Civil War slang, as skulkers, sneaks beats, stragglers, or coffee coolers. They "played off" (shirked) or played sick when battle loomed. . . . Some deserted for good. Some really were sick much of the time.

[2]The title of Stephen Crane's book *The Red Badge of Courage* comes from the concept of the wound as the badge of the fulfillment of manhood. It illustrates many of the phenomena described by later historians with great emotional power.

Linderman also points out that soldiers referred to the profound psychological changes that took place as "hardening." The realities of war led to an end of the initial response of elan, as soldiers were more and more immersed in the blood, terror, and carnage of the battlefield.

One suspects that this "hardening" may be a far different process from the "numbing" described by Lifton (1973, in his diagnostic analysis of posttraumatic stress disorder in Vietnam), but they are both protective adaptations for a significant proportion of those involved in prolonged warfare. They are phenomena that will be seen again and again throughout World War I, World War II, and the Korean War. They are the processes whereby death, dissolution, and destruction become part of a normal landscape that must be negotiated and navigated through if one is to fulfill the obligations of a soldier. As Linderman (1987, p. 241) points out, for most soldiers,

> The dread and sickening loathing created by many a corpse on a battlefield . . . is by familiarity and constant view transformed into a stoical indifference. Were this not so, the awful carnage of some battles would have made deserters of thousands of soldiers.

We can discern among Civil War veterans a series of symptom patterns that have in recent times been classified under the various rubrics of combat fatigue, battle shock, combat stress reaction, and posttraumatic stress disorder. We can see, as well, the continuation of some very old patterns that speak to the relationship of cohesion among soldiers as the sustainment of soldier behavior.

Descriptions of stragglers following their initial battle engagements are highly pertinent. It is estimated that following the initial battles at Antietam, one-third of the Confederate force was lost as "stragglers." Many are described in terms very much equivalent to the World War II descriptions of combat fatigue. Stragglers were described as sitting under trees, trembling, clutching their rifles, staring into the middle distance, jumping at any loud noise—the startle response that is today usually considered diagnostic of a combat stress reaction. They were described as incapable of any kind of proximate effective soldierly behavior until swept up by the provost guards, noncommissioned officers, or officers; organized; and brought back into their encampments. It is interesting to note that within a few weeks, most of these men had been reintegrated into their units and were considered fit for combat again. (See, for example, Sears, 1983.)

Throughout the Civil War, blind panic was often seen as the response to the first shock of battle. Members of the unit in the line of battle would break, turn, and run. The organic cohesion of the line was broken and with it apparently, if we

interpret the data correctly, all psychological capacity to resist the enemy and use the unit as a maintaining factor.[3] At Bull Run it was repeatedly reported that Union soldiers broke rank and fled in panic from the Confederates, crying out (and apparently believing) that they were the sole survivors of their regiments. In most cases, about 90 percent of each of the regiments had survived, neither killed, wounded, nor captured. This psychological power of the combat event, or the "traumatic" event, to reorder cognition and establish delusory truths that have no equivalent bases in reality is one that appears over and over again in war.

The culture of the time asserted that cowardice and constitutional or moral weakness were the sole sources of flight and of the inability to overcome fear. It appears that for a soldier to desert his unit by fleeing from the line of battle, it was important for him to believe that a level of disaster existed that legitimized his actions rather than believing that they were "fear driven." The only other acceptable symptoms that could account for the breakdown of behavior and the inability to continue in combat were physical. Real disease and illness were rife and claimed the majority of lives lost on both sides. The descriptions of soldiers who did not simply desert but ceased to be effective participants appear to indicate that psychogenic symptoms and ailments were also common.

During the Civil War, doctors began to pay attention to ambiguous (and, in terms of the medical knowledge of the time, difficult to diagnose or explain) physical conditions. Unexplained and unexplainable cardiac conditions were seen in moderate, but impressive numbers. These ultimately came to be known as "soldier's heart," "effort syndrome," and finally as DaCosta's syndrome. The soldiers who presented themselves with this "cardiac" disorder were capable of almost no sustained physical effort. Their heart rates were quite high, palpitations were common, and heart rate increased rapidly upon exertion. Overall weakness and fatigue were also characteristic. Few of the diagnostic techniques of the period could detect any known organic heart ailment that might account for these symptoms, and it was extraordinarily puzzling to the military surgeons of the time.[4] The stethoscope had been invented by Laennec in 1816 and first

[3]This is a point that is powerfully made by Hess (1997) in his chapter on the psychology of the battle line.

[4]A wonderful description of the attempt to understand this syndrome is in the official medical history given by a surgeon in a New Jersey regiment of the Federal Army. He was deeply puzzled by soldiers presenting with these symptoms. There was no sign of organic heart disease or of any other disease or fever, which made the extremely rapid heart rate difficult to understand. He noted that he knew that the only way to raise a human heart beat is to have the individual squat and make efforts as if he were at stool, but that would raise it only for a few moments. These people had highly elevated heart beats for days and weeks on end. Therefore, his thought was that this must be some kind of cardiac disorder that medical science did not yet understand. It must be pointed out that adrenaline was not discovered until 1901, and its role in release under strong emotion or stress in accelerating heart rate was not known before that time. Almost all of the symptoms that we today

described in 1819 as a single wooden tube; the binaural stethoscope was invented by Cammann in 1852. Cardiology was in its infancy, dependent almost entirely on exceptional training and skill in auscultation and stethoscopy to make a good diagnosis (one that could be confirmed only postmortem since techniques for visualizing heart action and state in living persons did not exist). Such skills were part of the repertoire of those few physicians trained in great medical centers like Vienna, Paris, London, and a very few places in the United States. For the most part, U.S. medical schools were "diploma factories," often turning out poorly trained, marginally competent physicians—a condition that was not to change until after the publication of the Flexner Report in 1910 (see for example, Porter, 1998). We can have no sure idea of how many soldiers actually had functional, as opposed to pathological, heart disorders. The capacity to make clear differential diagnoses between the two lay in the future.

POSTWAR PHENOMENA

In terms of postwar psychological and physical symptoms, the consequences for the soldier are difficult to discern and require a study of primary sources when they are available.[5] Linderman (1987) feels that, because of the overall patterns of American culture, veterans retreat into silence and do not allow themselves to contemplate their physical or psychological wounds. He attributes this in part to the soldiers' sense of disillusionment by the "real" nature of warfare in contrast to the civilian vision of the war. As Linderman (1987, p. 268) notes:

> In the war wounds had been suffered by some and not by others; the problems they created were thus the concerns of the individuals involved, not of society. The soldier had wished to rid himself of the effects of body wounds as rapidly as possible; the veteran would do everything he could to accelerate the disappearance of mind wounds. Disturbing memories were to be kept to oneself.

Linderman's (1987, p. 269) description of the postwar behavior of Oliver Wendell Holmes is pertinent

> He was a war hero whose demeanor surprised those entertaining him during a tour of England in 1866: He was "as little military as need be, and, like Coriolanus, not baring his wounds . . . for public gaze." He would not read of the war or observe the anniversaries of its battles.

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consider as being functional, psychogenic, or stress driven could not be construed as such then. The major exceptions were the symptoms denoted as hysterical, and at that point in time they were still considered unique to women.

[5]An attempt to assess the psychiatric consequences of the Civil War (particularly for veterans in the postwar period) came to my attention, unfortunately, too late to be drawn upon for this report (Dean, 1997).

The realities of war were effaced, first by silence and then, 20 years after the Civil War, by a renaissance of the heroic view of war as the splendid shaper of the citizenry and men's characters.[6] Dean (1997) has published a pertinent view of the probable range of consequences for Civil War veterans in the postwar era, including symptoms consonant with posttraumatic stress disorder. While his sample was drawn from veterans hospitalized in asylums in Indiana, he construes them as a window on a wider range of less dramatic disabilities afflicting other veterans. His small sample demonstrates higher risk for youth, combat exposure, wounding and prisoner-of-war status than his control group. The contributions of alcohol abuse and alcoholism have resonance with those who were psychologically damaged in other wars. The markedly high levels of violence and spousal abuse of this hospitalized sample, however, is not reflected in the experience of veterans of later wars.

[6]This vision of the United States was epitomized in the behavior, writings, speeches, and conversations of Theodore Roosevelt.

Chapter Four

CONCEPTUAL AND THEORETICAL MEDICAL DEVELOPMENTS IN THE 19TH AND EARLY 20TH CENTURIES

Military medical systems do not exist in isolation. The thinking that dominated approaches to treating stress-related illnesses of World War I and World War II arose from concepts that developed in the late 19th and early 20th centuries. These concepts became part of the physician's expectational set as well as of the soldiers' illness presentational set, thereby defining many of the symptoms and responses of the psychological casualty.

HYSTERIA AND HYPOCHONDRIA

In the 19th and early 20th centuries, hysteria was believed to stem from a disorder of the uterus, which was presumably responsible for a protean range of symptoms and ailments. Since the source was a part of the female reproductive system, "hysteria" was considered gender-specific, although the range of possible symptoms involved was vast. Male analogs of this disease were traditionally viewed as rising from the spleen, and its expression was most often categorized as hypochondria (literally, of the abdomen). In 1822, Falret broke with the past tradition of defining hypochondria as a "moral" failing and redefined it as a mental disorder, i.e., a psychological ailment. (See Baur, 1988.) In 1831, the British physician James Johnson grouped together hysteria and hypochondria as "wear and tear syndrome," resulting from "physical and mental overexertion and the stress attendant on life in a new industrialized society" (Webster, 1995). In 1851, Benjamin Brodie diagnosed and classified "hysterical joint disease" (or neuralgia of the joints), with its symptoms mimicking arthritis but without the accompanying diagnostic signs.

In the period following the Civil War, new categories of diagnostic thought about the concept of hysteria, "life-events" trauma, and the effects of life patterns on the development of psychological and physical symptoms had emerged. They helped to define the approaches and analytic tools applied to combat-related illnesses in World War I, World War II, and beyond. Actual

knowledge of factors, dynamics, and underlying processes changed dramatically, but the meta-categories—the overall associational structures derived from observation—have remained comparatively stable.

NEURASTHENIA (NEUROCIRCULATORY ASTHENIA)

In 1869, George A. Beard, an American neurologist, developed the diagnostic category of neurasthenia (literally, nerve weakness). Neurasthenia's symptoms included "loss of appetite, weakness of the back and spine, sleeplessness, sick headaches, fugitive neuralgic pains," which were added to over time to include such symptoms as

> noises in the ear, atonic voice, deficient mental control, bad dreams, nervous dyspepsia, heaviness of the loin and limb, flushing and fidgetiness, palpitations, spinal irritation, uterine irritability, impotence, hopelessness and fears such as claustrophobia, agoraphobia and fear of contamination (Webster, 1995, p. 186).

It is clear that neurasthenia is a syndrome that has many of the same characteristics that are today associated with chronic fatigue syndrome and multiple chemical sensitivity. Neurasthenia's symptoms also include many of those presented by some veterans suffering from Gulf War illnesses.

Beard defined the causative agents of neurasthenia as the pace and strains of American life. He saw it affecting males more than females and interestingly defined it as essentially class and culture bound. It is described as afflicting primarily the affluent because it represented the response of more finely grained and organized nervous systems to the pressures and strains of life. Ultimately Beard decided that these problems of the very sensitive and well-bred required "electrical" treatment, the panacea of the day, and he treated neurasthenia with electric belts and similar instruments. This was in keeping with a medical belief of the time that electricity was vital to the body's well-being and the proper functioning of the nervous system, and therefore applications of electricity would correct errors and faults in body functions.

CHANGES IN THE CONCEPT OF HYSTERIA AND TRAUMATIC NEUROSIS

The concept of hysteria was transformed into traumatic neurosis, making it gender neutral and leading to the present construct that we call posttraumatic stress disorder or posttraumatic stress syndrome. Much of the critical thinking and work regarding hysteria was performed by Briquet at the Hospital de la Charite in Paris, who published his findings in *Traite de l'Hysterie* (1859). As Ellenberger (1970, p. 142) points out:

> He defines hysteria as "a neurosis of the brain, the manifestations of it consisting chiefly in a perturbation of those vital acts which are concerned with the expression of emotions and passions." He found one male hysteric for every twenty females and believed that hereditary predisposition played a vital role it its development.

The transformation of the concept of hysteria began during the later part of the 19th century when there were persistent and continuous railway accidents. Individuals who were involved in such accidents suffered a wide array of symptoms, often after a significant time delay. In many cases such symptoms were seen in patients who had no detectable injury or neurological damage. Others experienced symptoms well beyond those expected from the modest injuries sustained. Initially termed "railway spine," these injuries were later renamed traumatic neurosis (after the older definition of neurosis, a disorder of the nerves brought about by exposure to trauma). Traumatic neurosis was a complex and thorny diagnosis, however, because the prolonged aftereffects of railway accidents were often the basis of litigation for compensation from railway companies.[1]

In 1883, Herbert Page, an English physician asserted that the sequelae to "railway spine" were not based upon physical insult but a result of "nervous shock" and therefore were a form of hysteria. He asserted that the paralyses and loss of sensation (considered a diacritical of hysteria) in these patients were not organic.[2] Again, the symptoms often appeared well after the railway accident. They were like those we see today in posttraumatic stress disorder as well as those of neurasthenia or other similar fatigue syndromes with an emphasis on physical symptoms.

While Page's view was rejected by the Austrians and Germans, it received its most important endorsement from Charcot who utilized the extended construct of the functional, posttraumatic disorder to broaden and redefine notions of hysteria, particularly male hysteria. Thus Charcot defined two kinds of male hysteria, the classical one (*grande hysterie*) and the posttraumatic form (*petite hysterie*).[3] Charcot's ideas tied the concepts of hysteria to hypnotism as

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[1]In cases of traumatic neurosis, malingering was often broached, but over time more and more investigators came to reject the hypothesis that malingering was the primary basis for symptom presentation. Despite this, the term "compensation neurosis" came to be attached by many to persistent psychological and physical symptoms following an accident. It is still a category used for symptoms that persist during the course of litigation, even though the symptoms seldom disappear following payment of compensation.

[2]This position was widely accepted in Anglo-American and French medicine but rejected by a number of German physicians who maintained that these sequelae were different in severity and intensity from "hysteria" and should be classified as "traumatic neuroses."

[3]These notions were to have significant influence on Sigmund Freud, who spent some four months working with Charcot at the *Salpetriere* in the winter of 1885–1886.

its treatment mechanism. From 1890 on, Charcot's influence waned in the face of two rising modes of approaching the problem of hysteria and its symptoms.

The first was psychotherapy, ultimately to be personified by Freud, which defined the sources of the problem not in heredity or in the existential traumas of the present, but in the early developmental history of the individual. The second approach was that developed by Charcot's successor at the *Salpetriere*, Joseph Babinski. Babinski proposed "a purely pragmatic definition of hysteria. Hysteria . . . is the sum total of the symptoms that can be called forth by suggestion and dispelled by counter suggestion" (Ellenberger, 1970). While he felt that there were individuals predisposed to high suggestibility, he focused on the collusive nature of symptom elicitation: the patient producing what the physician, and by implication the medical system and medical culture, "expected" him to produce. As a result of Babinski's reformulation, the number of diagnosed cases of hysteria in Europe declined in the first decade of the 20th century.

In sum, Babinski's formulation of suggestibility, Beard's concept of neurasthenia, and the rapidly developing schools of psychotherapeutic thought informed the paradigms for diagnosis and explication of combat-related stress responses in this century. These paradigms crystallized during World War I into modes of allocating causality for the psychological consequences of combat and combat deployments that remain part of the more complex models in use today.

THE MAJOR MEDICAL TEXT: OSLER'S DEFINITIONS

To understand clearly the structures that underlay the conceptualization and diagnosis of psychological and psychophysiological symptoms during World War I, it is reasonable to review the conceptual apparatus of the educated physician through the text that was the medical standard for decades: *The Principles and Practice of Medicine*, first published in 1892 by Sir William Osler, the first Chief of Medicine at Johns Hopkins University. It is my belief that the following symptom sets, which were defined by Osler for each of the diagnostic categories (traumatic neuroses, hysteria, and neurasthenia), became the cognitive undergirding of military psychiatry in World War I.

Traumatic Neuroses

Osler defines traumatic neuroses (also know as railway brain, railway spine, and traumatic hysteria) as, "a morbid condition following shock which presents the symptoms of neurasthenia or hysteria or both." The condition often followed an accident but may follow "a profound mental impression." "Severe mental

strain combined with bodily exposure may cause it," as might "a slight blow, a fall from a carriage or on stairs."

Osler divides the symptoms of cases of traumatic neuroses into three groups:

- Simple traumatic neurasthenia. This symptom set includes headache; tiredness; sleeplessness; inability to concentrate; nervous irritability and changes in mental attitude; despondency; and in extreme cases, depression, numbness and tingling in the extremities, back pain, disturbed digestion, and weight loss as well as the cardiovascular changes described for neurasthenia. The physical examination will often be unremarkable.
- Cases with marked hysterical features—in addition to the symptoms of neurasthenia, symptoms characteristic of hysteria may also develop. The patients have headache, backache, vertigo, limitation of the field of vision, hemianesthesia, and marked tremor.
- Cases indicating or simulating organic disease. These cases demonstrate marked sensory and motor changes, including anesthesia, paralysis, and contracture. Osler notes the paucity of such cases that have gone on to demonstrate organic disease, stating that,

  > So far as I know no case with autopsy has been reported in this country, nor have I seen an instance in which the clinical features pointed to an organic disease which had followed upon a traumatic neurosis (Osler, 1892, p. 984).

Hysteria

Osler defines hysteria as "a state in which ideas control the body and produce morbid changes in its functions." He sees two predisposing causes: heredity (providing an "abnormally sensitive" nervous system) and education (in our terms, psychological history). He contends that it is more common in some ethnic groups. What Osler terms the nonconvulsive forms of hysteria are of concern to us here and are explained below:

- The disorders of motion: paralyses,[4] contractures, tremors and spasms, which may persist for months or years.
- The disorders of sensation: these include anesthesia and hyperaesthesia, (i.e., increased sensitivity and pains in various parts of the body, particularly the back and abdomen). There are also disorders of the senses (i.e., disturbances of smell, taste, vision, and hearing).

[4]"There is no form of organic paralysis which may not be simulated in hysteria" (Osler, 1892, p. 969).

- Visceral manifestations: These symptoms include disturbances in respiratory rhythm (i.e., aphonia hiccup, cough), the digestive system (i.e., disturbed appetite, dyspepsia, gastric pain, gagging, vomiting, flatulency, diarrhea, and constipation), the cardiovascular system (i.e., tachycardia, chest pains, flushes in various parts of the body, and sweating), and the musculoskeletal system (i.e., joint affections involve sensitivity, pain, and swelling). Osler also maintains that he saw a number of cases of hysterical fever. These physical symptoms can be accompanied by a wide array of mental symptoms.

Neurasthenia

Osler defines neurasthenia as "the expression of a morbid, unhealthy reaction to stimuli acting on the nervous centers which preside over the functions of organic life." He felt it was caused by both heredity and strain, particularly those "cares and anxieties" of living that lead to distress and "worry." The symptoms of neurasthenia are wide-ranging and varied. The mental symptoms may include inability to focus upon a task, headache, irritability, depression, and disturbance of vision. The patient may complain of "weariness upon the least exertion, of weakness, pain in the back and of aching pain in the legs." There may be local areas of tenderness, and disturbances of sensation, such as numbness and tingling. Other symptoms may include cardiovascular symptoms, including palpitations, cardiac irregularities, tachycardia; vasomotor symptoms, such as flushes and hyperemia of the skin; gastrointestinal symptoms; and sexual difficulties.[5]

Beyond Osler's Definitions

At this time, the leading figures in psychiatry espoused Osler's idea that a combination of hereditary and situational factors caused the above conditions. William Alanson White (1916) described all "mental disease" as

> being the necessary outgrowth of his [the patient's] particular and peculiar personality, not only so far as it had been acquired during his growth and development but also as far as it had been grounded in the hereditary elements with which he started.

[5]Quotations are drawn from Osler, 1892, pp. 967–984. The materials remain essentially the same in the 1910 edition.

ANCILLARY DEVELOPMENTS IN MILITARY MEDICINE

Within military medical thinking of the early 1900s, observations were made with respect to unit cohesion and esprit de corps in relation to illness that ultimately became part of our contemporary paradigm, although they played only a minor role in medical thought during World War I.

The relationship between cohesion or "primary group bonding" in respect to performance and sustainability on the battlefield had been noted since the time of Sun-tzu and the Western classical era. The recognition of the connection between cohesion and unit climate and illness was a result of the application of epidemiological observation of morbidity in military organizations. The almost universally high morbidity and mortality rates, particularly in overseas venues, had probably served to mask the possible contributions of psychosocial variables to illness rates. Therefore, this observation was more easily made following the introduction of competent methods of field sanitation and preventive medicine. The 19th century French *Encyclopedia of Medicine* observes that illness and psychological problems seem to be highest in units characterized by "poor" leadership and low cohesiveness. Soldiers in such units tended[6] to have far more medical problems and issues than did those in their otherwise similar sister organizations.

There is little of substance to be learned from the American military experience throughout the late 19th and early 20th centuries. A small professional force[7] was engaged in the occasional short and sharp battles of the Indian wars. Its losses to desertion and disease were chronically high. The only major conflict of the period, the 1898 Spanish-American War, relied heavily upon volunteers who were drawn widely from the population, and the war was short and triumphant. The overwhelming bulk of casualties came from diseases that were or had been endemic in the United States itself. While its medical leaders were responsible for many major developments in American civil medicine, the force's medical problems were of little interest to society at large, still steeped in the American "antimilitaristic" tradition (see, for example, Marshall, 1972).

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[6]This is particularly true of the numerous colonial deployments of the French Army of the period.

[7]The force seldom if ever numbered more than 40,000, minuscule by European standards.

Chapter Five

WORLD WAR I

In the 20th century, each war has produced its own categories of psychological and psychiatric casualty; however, World War I was the first clear exemplar of the complex interacting variables of combat stress and its dominant symptom sets.

It is difficult today to comprehend the enthusiasm with which the belligerent populations of both sides greeted the outset of World War I. The notion of war was both glamorous and desirable; it was to be the test of both national and individual toughness, character, and worth. Military doctrine on both sides called for a war of maneuver guided by the "spirit of the offensive" that would be both brief and glorious. The short period of maneuver ended weeks after the initial German offensive on the West. It was followed by the deadlock on the Marne and the "race for sea," which ended with the prolonged stalemate of trench warfare. The means of war were ultimately much different from those hypothesized at its outbreak.

SHELL SHOCK

There are few reports of casualties that might be considered of a "psychological" nature during the initial period of the war of maneuver. Following the stabilization of the trench line from Switzerland to the sea and the commencement of trench warfare during 1915, the picture began to change. From 1915 on, the war produced significant numbers of casualties suffering from "shell shock." This new disorder, actually first seen during the Russo-Japanese War, produced a wide array of both physical and psychological symptoms, and during 1915 several major transitions were made in terms of the recognition and evaluation of the new illness. In the past, the breakdown of behavior associated with this new syndrome or sickness would have been characterized as cowardice or malingering and been treated either punitively or with contempt.

World War I was a watershed period when the effects of "combat stresses" began to be recognized. These changes in perception were captured in extraordinary fashion in a statement by Company Quartermaster Sergeant Gordon Fisher:

> I went further along and looked into the next dug-out and there was a guardsman in there. They talk about the psychology of fear. He was a perfect example. I can see that Guardsman now! His face was yellow, he was shaking all over, and I said to him, "What the hell are you doing here?" He said, "I can't go. I can't do it. I daren't go!" Now, I was pretty ruthless in those days and I said to him, "Look, I'm going up the line and when I come back if you're still here I'll bloody well shoot you!" . . . when I came back, thank God, he'd gone. He was a Coldstream. A big chap six foot tall. He'd got genuine shell shock. We didn't realize that at the time. We used to think it was cowardice, but we learned later on that there was such a thing as shell shock. Poor chap, he couldn't help it. It could happen to anybody (Macdonald, 1995, p. 476).

While often referred to as a unitary phenomenon, shell shock was actually a diverse congeries of symptom complexes. Osler (1892) (see Chapter Four) observed almost all of these. The initial cases that were recognized as shell shock appeared after an enemy artillery attack. At first, most in the military medical system viewed it as a physically induced illness. In the classical model of Western medicine, a single causal agent was identified; shell shock was defined as a "commotional" illness: a physical ailment generated by the shock wave of exploding ordnance coming into contact with the head, producing microhemorrhaging in the brain, hence the term "shell shock." This microhemorrhaging was presumed to produce alterations in behavior and a wide range of symptoms. The most flagrant and widespread were severe physical symptoms that were completely disabling and could be very long lasting. Other symptoms were of the sort described in Macdonald (1995). Most prominent were the symptoms that came to be called conversion disorders or conversion reactions. All had been prominent in the spectrum of hysteria: blindness, paralyses, contractures, aphonia, anesthesias, and profound amnesias. Other symptoms presented in clusters were considered diagnostic of neurasthenia.

A significant number of shell shock victims could be described in the same terms as those used for stragglers in the American Civil War: withdrawn; staring into the middle distance; exhibiting tremor; often clutching their weapons; overly responsive to any loud, sudden noise; continuously fatigued with any effort or exertion; and unable to function as soldiers. The extent of the range of symptoms and their protean nature is underlined by the following description by Major William E. Boyce, a medical officer in the 30th Infantry in World War I:

> Some of them cursed and raved and had to be tied to their litters; some shook violently . . . some trembled and slunk away in apparent abject fear of every in-

> coming shell, while others simply stood speechless, oblivious to all surroundings (Coffman, 1986, p. 224).

For those soldiers not exhibiting major physical symptoms, field and medical officers initially assessed shell shock as cowardice or malingering. It is likely that a number of such individuals were executed for cowardice in the face of the enemy.

By the winter of 1915, however, both British and French physicians (primarily neurologists to whom the cases were referred) had noted that the vast majority of soldiers diagnosed as suffering from shell shock had not been close enough to artillery bursts or other explosions to have suffered physical commotional damage. Thus, there was no external event that could physically produce the symptoms and altered behaviors. Indeed when some of these casualties died, autopsy produced no evidence of brain hemorrhages, even at the microscopic level, or of other central nervous system insults or lesions that might be held accountable. The logical alternative was then to conclude that the greatest contributors to such illnesses were emotional and psychological stresses, brought on by the strains of the battlefield and the war zone. The sources that were drawn upon for diagnosis were the standard categories of hysteria, neurasthenia, and traumatic neuroses (see Chapter Four for definitions).

The Shift to a Psychological Interpretation

French physicians were the first to reach the conclusion that shell shock was essentially a psychological phenomenon, a response to the strains of terrifying and overwhelming battlefield experiences. British military medicine came to the same conclusion and ultimately divided the classification into two categories: "shell shocked wounded"—those exposed to direct physical trauma—and "shell shocked sick"—those for whom there was no exposure to direct physical trauma (Babington, 1997). Both the British and French defined the problem in terms of the meta-category of hysteria and as one particularly grounded in the construct of suggestibility (as Babinski had developed it). The missing element of physical trauma in shell shock led to many complications in diagnosis. Was the patients' reaction neurasthenia? Hysteria? Traumatic neurosis? For a large number of patients, the diagnostic category never became more precise than the administratively useful, if vague, "Not Yet Diagnosed (Nervous)."

After 1914, a number of physicians began to see shell shock as essentially a psychological or emotional disorder. An interesting early observation was made by Myers (1915, p. 320) in his summary of three cases:

> They appear to constitute a definite class among others arising from the effects of shell shock. The shells in question appear to have burst with considerable noise, scattering much dust, but this was not attended by the production of odor. It is therefore difficult to understand why hearing [in these cases] should be (practically) unaffected, and the dissociated "complex" be confined to the senses of sight, smell, and taste (and to memory). The close relation of these cases to those of "hysteria" appears fairly certain.

Equivalent reports appeared in the German medical literature in 1915.[1]

It is important to point out that the rising number of cases of shell shock diagnosed as hysteria was paralleled by a rising number of cases of hysteria among soldiers who had *never been deployed out of Britain.* In his article "Some Diseases Which Have Become Common Among Soldiers in This Country" in *Guy's Hospital Gazette,* C. P. Symonds (1916, p. 439) points out that "one is also struck by the number of functional conditions met with in men who have not been abroad."

Social and cultural factors appear to have powerfully influenced diagnosis and disposition. Officers were less likely to break down during combat than enlisted men but, proportionally, were more likely to break down over time. Officers were more likely to produce the symptoms of neurasthenia, while enlisted men were more likely to produce the symptoms of hysteria, particularly conversion disorder symptoms. In addition, enlisted men exhibiting mild symptoms were liable to be returned to the trenches immediately, while officers with similar symptoms were usually withdrawn for more-protracted treatment. Leed (1981, p. 164) states:

> in war, as in peace, the notion that disease could be without physiological signs, that it could have a purely behavioral expression, seems to be the exclusive property of the higher social orders.

Treatment of Shell Shock

The treatment methods were diverse but were all deeply rooted in preexisting constructs and perceptions. Many physicians utilized punishment in patterns that psychologists today would characterize as massive aversive reinforcement to alter behavior. Treatment of enlisted men tended to be harsher and more punitive than that of officers. (See, for example, Ellis, 1984.) One of the most common treatment modalities, particularly popular in the French Army, was a form of faradization (application of electric shock, using very high voltage and low amperage) called *torpillage.* It was found to be particularly useful when

[1]See, for example, Binswanger, 1915; Gaupp, 1915; and various others.

shocks were applied to the affected part of the body. Very high levels of success were reported; contracture rapidly disappeared, and/or vision, speech, hearing, use of a limb, etc. were rapidly restored. The use of "electric therapy" to "restore proper function to weak nervous systems" and "weak nerves" went back for a good number of years.[2] In addition to such treatments as *torpillage,* enlisted men were often treated with an entire array of what came to be called "disciplinary therapies" by both medical officers and those on the line (see Leed, 1981). A possible contextual reason for the adoption of ideas and therapies designed to return as many men as quickly as possible to the front may have its roots in the more and more desperate manpower needs of the combatants as the war progressed. For the Allies these needs were not ameliorated until the United States entered the war. Both the British and French Armies were declining in absolute numbers and replacements could not make up losses. These radical forms of therapy were seldom used with officers in the British Army. Typical treatment for them was rest and encouragement, usually accompanied by withdrawal from the combat zone for a longer period of rest and rehabilitation. Some officers were treated with "primitive" forms of psychotherapy, ranging from the nascent forms of psychoanalytic treatment[3] to pep talks and appeals to patriotism and loyalty.[4]

CHANGES IN THE SIGNIFICANCE OF MILITARY GROUPS AND TREATMENT NEAR THE FRONT LINES

World War I saw the return, from the time of the Roman Legions, of the segmental organization of the force on the battlefield, with battalions, companies, platoons, and even squads achieving a new tactical and social criticality in battle—a process that was to accelerate rapidly throughout this century. By implication, we must consider that the consequences of these changes for the sustainment of the soldier on the battlefield and for his mental health and psychological well-being were momentous.

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[2]It had been pioneered by Beard in the treatment of neurasthenia and had been taken up by many others. A somewhat gentler version of *torpillage* in a civilian environment is reported by Cobb, 1915, which involved a chair fitted with ten pair of aluminum electrodes. At the time, these methods were controversial: Did they rehabilitate the nervous system or was the therapy so punitive that the subject was forced to give up his symptoms to protect himself by thus avoiding additional shocks?

[3]These studies were carried out by W.H.R. Rivers at the Craiglockhart hospital for shell shock. The victims were brilliantly described by Pat Barker in the trilogy centering on Rivers and Siegfried Sassoon, the poet who became a "shell shock" case as a young infantry officer on the Western Front. See Barker, 1992, 1994, and 1996.

[4]Leed (1981, p. 169) points out that, "Lortat-Jacobs reported that he had obtained good results in Paris with shell shocked soldiers merely by appealing to the 'individual's sense of honor and by publicly administering the oath.'" In the American medical histories of the war, equivalent therapeutic successes were reported for similar simple appeals to patriotism, the flag, and, above all, return to one's comrades.

Prior to World War I, small units and small groups were generally the soldier's primary support and nexus of relationship during training and garrison duties. However, his physical and psychological survival in battle depended upon the integrity of the entire force. If the "line of battle" were broken, his possibilities of survival were minimized. In World War I, the matrix of squad, platoon, and company became the critical variable to both his survival and the survival of the primary group with which he had bonded in training and garrison. This tactically driven reordering of the social structure and ecology of combat thus becomes, I believe, a major driver of the importance of the psychosocial climate of the small unit and the qualities of its leadership in determining mental health consequences for soldiers.

The use of return to the group[5] as a motivation for soldiers to get well was a more consistently powerful source of motivation in World War I than it had been previously. B. H. Liddell Hart (1927) was, I believe, the first to point out the revolution in the social structure of combat that this war created. Liddell Hart states that prior to World War I, no structure below regiment or brigade equivalents had any maneuver independence or responsibility on the battlefield. Battalion, company, and platoon were all part of an almost amorphous line of battle. This is because before World War I, the soldier was dependent for his ultimate survival not on his immediate comrades but on the integrity and cohesion of the entire line. In World War I, the immediate group had become a powerful source of survival. Treatment as described above was carried out as close to the front as reasonably possible, in venues ranging from the communications trenches to hospital facilities, with a reasonable level of success with all forms of therapy. The soldier expected and was expected by the therapists to return to his immediate group.

THE REDEFINITION OF HYSTERIA

What was most impressive to those British psychiatrists and neurologists who were involved in treatment of troops close to the front, as well as to psychiatrists involved in treatment in hospitals in France and in the United Kingdom, was the speed with which they were able to accomplish cures of often intractable physical and psychological symptoms. Dr. Arthur Hurst was at the forefront of treating soldiers with hysteria.[6] Hurst (1919) proposed a new definition of hysteria: "Hysteria is a condition in which symptoms are present that have been produced by suggestion and are curable by psychotherapy." Hurst felt that one

[5]Particularly the group defined by squad, platoon, and company.

[6]Hurst was the officer in charge of Seale Hayne Military Hospital and a neurologist at Guy's Hospital. Hurst and his collaborator J.L.M. Symns held salient positions in British military medical treatment and research.

of the keys to understanding hysterical symptoms was the high level of suggestibility present in human beings, a point that I believe continues to be of great importance. As Hurst (1919, p. 563) put it,

> there is no one who is so devoid of suggestibility that he may not develop them [hysterical symptoms] if the suggestive influence is sufficiently powerful. Whether a given person will develop hysterical symptoms under given conditions depends upon the degree of his suggestibility and the strength of the suggestion.

Hurst lists four major categories that produced hysterical symptoms during World War I: Fear, which resulted in shell shock; gassing, which resulted in "gas neurosis"; trivial wounds, which caused hysterical symptoms; and injuries or disease of the nervous system, in which symptoms amplified long after physical damage had resolved. It is of great interest that in his analysis of shell shock, Hurst (1919, p. 563) presages the analysis of many prominent military psychiatrists and medical sociologists of World War II (including Glass and Parsons):

> In the first two years of the war cases of this kind were given the unfortunate name of "shell shock" in the belief that they were organic in origin and due to actual concussion caused by the explosion of powerful shells. Consequently no attempt was made to cure them by psycho-therapy, and the treatment by rest and sympathy helped to perpetuate them; this unfortunate result was increased by the use of the word "shell shock," which gave the patient the idea that he was suffering from new and terrible disease. When, at last, the true nature of the condition was recognized, it was found that psycho-therapy not only resulted in the immediate disappearance of the symptoms . . . but cases of two and three years standing were also frequently cured at a single sitting at hospitals.

Another of Hurst's major points still relevant today is his view of the amplificatory and tenacious relationship between a real precipitating disorder, injury, or insult and the processes of suggestion, in terms of the continuation and exacerbation of symptoms.

Rivers (1918) varied from Hurst in seeing shell shock, renamed by some, "war neurosis," as a breakdown of the human being's rational defenses and abilities to deal with fear and anxiety. Others, in all the major combatant nations, began to adduce further causal factors arising out of the developing depth psychologies of Freud and other psychoanalysts. Leed, for example, cites the psychoanalyst Sandor Ferenczi, whose view encompassed the shattering loss of a soldier's self-esteem in technological warfare, which deprived soldiers of the tools to defend themselves. Although other psychiatrists had differing notions of causation, all agreed that the leading cause of "war neurosis" was not sudden overwhelming trauma, but prolonged static exposure to and anticipation of danger.

Most commentators agreed that symptoms of war neurosis could be resolved rapidly with psychotherapy treatment that included reassurance, education, and explanations about treatment combined with the patient's belief in the efficacy of the treatment. Underlying this treatment, there appears to have been a mutual trust between the patients and their military physicians, a trust that has certainly diminished over time. As Rixon (1919, p. 417) put it,

> In treating these conditions there is one factor indispensable to success—i.e., the patient's own belief that he can be cured. At neurological centers this point is gained by the "atmosphere of cure" prevailing. The patient is in a ward with others who until recently were, they tell him, just as bad as he is.

Indeed, Hurst and Symns (1918, p. 139) asserted:

> Our more recent experience has shown that the prolonged re-education which we had thought was required to convert into a cure the great improvement which followed the active treatment of long standing cases directly after admission is unnecessary, and we are now disappointed if complete recovery does not occur within 24 hours of commencing treatment, even in cases which have been in other hospitals for over a year.

Rivers, however, appears to have required a much longer period of psychotherapy to achieve results.

Although Hurst, Rivers, and others espoused an essentially "psychogenic" etiology for what had come to be defined as war neurosis, there were those who continued to believe that physical insult—i.e., commotional hemorrhaging in the brain—was the only cause of legitimate shell shock. This group[7] still had significant support within the military establishment.

THE AMERICAN EXPERIENCE

Prior to entering World War I, the United States sent Thomas Salmon, a leading New York physician, to examine how the Allies were dealing with the problem of shell shock. Salmon fundamentally accepted the psychological concepts developed by the British and French and the treatment models that had been developed by the British. Those sets of constructs for dealing with the problem of shell shock or war neurosis became the organizing principles for the U.S. Army when it entered the war. As a result of Salmon's recommendations, a psychiatrist and a support staff were assigned to each division (see, U.S. Army Medical Department, 1929). The psychiatrist's duties, as outlined by the chief surgeon of the American Expeditionary Force (A.E.F.), were:

[7]Centered at the Maudesely Hospital, the premier institution of its kind in Britain.

> to keep the fighting strength of the Division at the highest possible point and bring about the prompt elimination from the Division of those who become unfit for duty. Examination and sorting of officers and men returned to advanced sanitary posts for exhaustion, concussion by shell explosion, and war neuroses in order to control their evacuation. Treatment of light cases of exhaustion, concussion and war neuroses in divisional sanitary formations, so as to preserve the greatest number possible for duty (quoted in Raynor, 1918).

American military psychiatrists found their duties to be very similar to those of their British counterparts:

> Functional nervous disease is responsible for at least 10 per cent of the evacuations of soldiers during an attack. The vast majority of these men are found to have hysteria. . . . Those who do not have hysteria are for the most part in a state of high emotivity, termed anxiety neurosis on the records of the A.E.F. However, the majority of anxiety cases do not arise during battle. That condition is usually of slow onset and occurs after long continued duty, as has been shown in the French Army (Williams, 1919, p. 549).

POSTWAR CONCERNS

The models and concepts that were developed during the war did not persist after the soldiers returned to civilian life. The primary "lessons" or concepts that came to dominate the civilian literature in the 1920s are those of predisposition and a return to the constructs of Charcot and Babinski. Certainly, significant influences came from the concepts popularized by Freud and his followers. The kinds of symptoms and reactions classified under the rubric of "hysteria" were considered the result of profound tendencies in the individual, both constitutional and developed as part of an aberrant psychological history. Issues of cost and pensionability came to the fore. The individual who continued to exhibit symptoms tended to be described as an inadequate personality or as constitutionally inferior. Many of those who testified before the British War Office Committee on Shell Shock in 1922, including a number of medical officers, still viewed it as an expression of cowardice or of manipulation to obtain discharge from the danger zone (see Leed, 1981). In the United States, the eugenics movement and racially motivated concepts[8] strongly influenced thinking. It was accepted that some ethnic groups were predisposed to developing war neuroses.

This mode of thought—defining aspects of such symptomatic responses in racist terms as inherently predispositional—was stated baldly (and quite acceptably to an audience of distinguished psychiatrists in the section on nervous and mental diseases) at the annual meeting of the American Medical

[8]Sentiment was strong enough to lead to changes in immigration laws.

Association in 1921. After focusing on "pension neurosis," Benton (1921, p. 362) continues:

> In addition to the recently growing pension neurosis group another group has been present and prominent continuously since the opening of this hospital.[9] The particular condition occurs among foreigners, especially, Italians, Greeks, Austrians and Poles. It is most pronounced in Italians . . . . One of the fundamentals of the condition seems to arise from the general belief that the United States is a very wealthy country and that its government is due and destined to provide for them for the rest of their lives.

THE LESSONS OF WORLD WAR I

In summary, during World War I some important themes were established that affected interpretation of psychological problems in later wars. First, the most common symptoms of the consequences of combat in World War I, whether termed shell shock, hysteria, war neurosis, or gas neurosis, were physical. The most common modes of response to phenomena—which we, today, define as stress-related psychological, psychosocial, or psychophysiological—were also physical. These physical responses were particularly striking among enlisted personnel. Officers appear to have more often exhibited the lesser but equally disabling and sometimes more tenacious symptoms of neurasthenia. In addition, there seems to be a correlation between culture and symptoms. World War I's value system was closer to that of the Civil War—polarized between the courageous and the cowardly—than to that of our era. While military and civilian physicians rapidly came to agreement that the overwhelming majority of "shell shock" and "war neurosis" casualties were attributable to a primary psychological, psychophysiological, or physiopsychological origin, popular culture and belief held to the older system of Civil-War-era beliefs.

It is of interest to note that the extraordinary living conditions of trench warfare were seldom evoked as contributory to shell shock. Mud, hunger, fatigue, chronic sicknesses, often continual damp, lice, and rats were seldom mentioned as possible contributors to the soldiers' state. Even so astute an observer and therapist as Rivers (1918) preferred an essentially psychological model of causality, deriving the symptoms of war neurosis from the degree of immobility demanded of the soldier in his combat task. A fuller appreciation of the roles that might be played in symptom generation by environmental factors in the combat zone was not to come until World War II.

As a cultural phenomenon *during* World War I, the legitimacy of the symptoms that called for withdrawal of the soldier from the trenches or the combat zone

[9]Public Health Service Hospital for the Care of Psychoneurotic War Veterans.

would then, for most, be questionable if physical symptoms were not a part of the expression of the disorder. The punishment for the exhibition of essentially psychological symptoms was often in the earlier years of World War I, summary and massive. Men whom we would today classify as combat-stress casualties were shot for "cowardice." Ferguson (1999) indicates that a significant proportion of the 346 British soldiers executed were shot for cowardice, many of whom were suffering from shell shock. Babington (1997) illustrates this cogently with four cases of soldiers previously seen as suffering from shell shock who were subsequently executed for cowardice. In Britain, "cowardice" was punishable by death until 1930.

The values of Western culture changed between World War I and World War II. For instance, before World War I, *dulce et decorum est pro patria mori* (it is a sweet and decorous thing to die for one's country) was engraved at the top of memorial boards at schools and colleges. Throughout the war, many people really believed this sentiment, as did such prowar poets as Rudyard Kipling, Ruppert Brooke, and Alan Seegar. It was not until the 1920s that the concepts of war as a waste, loss, and/or sacrifice in vain were widely explored in relation to World War I.[10] Along with such percepts came a corresponding legitimization of both behavior breakdown for some and a view that the "normal" person was capable of negotiating a symptom-free life course in war and after it.

In hindsight, World War I has taught us that each war interacts with the beliefs of the wider popular culture and the medical and psychological knowledge and beliefs of the time. In response to the events of combat and deployment, soldiers experience, as a result of this interaction, a "culture of illness" and a set of (in Kleinman's (1988) terms) "legitimate," illness narratives that are both appropriate to those beliefs and acceptable to the social systems of the military and the nation. From observations about World War I veterans, we find another important fact: the high degree of interaction between symptoms initially generated by physical insult (such as toxic exposure, disease, or wounding) and the psychological and psychosocial processes characterized under the terms hysteria and war neurosis. Enduring, sometimes disabling, symptoms followed the pain and minor disability of slight wounds. Symptoms of disease often continued after the actual illness was resolved, and "gas neurosis," continued to reproduce the initial symptoms, long since cleared, of exposure to toxic agents in use on the battlefield. Today, these observations would indicate that physiolog-

[10]Exemplified in the poetry of Siegfried Sassoon and the novels of Erich Maria Remarque.

ically stressful and assaultive experiences involve the interaction of the physical insult with the cognitive system that determined its consequences.[11]

[11]In some sense, these perceptions were lost in the almost purely psychological paradigms of psychogenic disorder that gained popularity in the 1930s through the writings of Flanders Dunbar and much of Freudian doctrine.

Chapter Six

1919–1941: THE INTERWAR YEARS

The interwar years saw the development and spread of the concepts and assumptions of depth psychology, particularly of psychoanalytic thought. These contributed in great measure to assumptions about the sources of combat breakdown and symptom generation. They were also combined with eugenics theories to focus attention on screening and preselection as the most effective ways to minimize the number of men who might become psychological casualties in wartime. And they created the foundation for the unsuccessful "selection out procedures" of Selective Service in World War II.

World War I saw the weaving together, both intellectually and emotionally, of the various strands of knowledge, belief, and value about the effects of combat, deployment, fear, and anxiety upon human beings. This concatenation of ideas, often connected as non sequiturs rather than as logical correlates, was significant for the future guidance of medical thought and policy and for the immediate interpretations of postwar problems and symptoms. In a sense, this concatenation was a simple transformation of the long-standing division of the world of men into cowards and the courageous: It reinforced the view that cowardice was the result of biological inferiority.

The United States came out of World War I with a racially or ethnically based view of why "bad things" happened to soldiers in combat. Psychologically based symptoms and ailments (as we saw in the passage from Benton, 1921, in the previous chapter) occurred in people who had "inferior" nervous systems, which were attributed to their racial or ethnic origins. Those at risk had poor nervous systems, were inherently weak, and were intellectually inferior.[1] Such thinking fit in well with the eugenics movement, which had gained wide intellectual and political ascendancy in the United States. Thomas Salmon, who continues to be idolized in military psychiatric circles for his work in developing

[1]Based upon the appallingly inadequate and culturally biased Army Alpha and Beta "intelligence" test.

Army Psychiatry, was one of the leaders of the eugenics movement in the United States. He fully believed, as so many others did, that if "weak" people[2] were removed from the Army, the Army would never again have psychological problems at the levels seen in World War I. The "normal" man with a strong nervous system and reasonably good coping ability was perceived as immune from the stresses of war, while weaker men were susceptible to them.

The rising ascendancy of Freudian and other forms of "depth psychology" in the 1920s and 1930s, while not based on individual physical constitution or race, nevertheless complimented and reinforced the view that those predisposed to psychological breakdown were a vulnerable and detectable group. The members of this group were thought to be vulnerable because of experiences in infancy and/or early childhood. These concepts, however, had been fusing with the more environmentally oriented "psychobiology" of Adolph Meyer and his followers at Johns Hopkins and elsewhere. Meyer's model focused on the interaction of the psychodynamics of the individual with the effects of events in the environment. Concern with the latter typified the "Mental Hygiene" movement, in which Meyer was a major figure, and its commitment to psychosocial techniques of prevention. Depth psychology and psychobiology were of great importance during World War II. Concern with predisposition was to be dominant at the outbreak of the war. While predisposition contributed to the earlier predispositional model, it also created the foundation for the concept that psychological and behavioral symptoms were the result of mental insult, so that almost anyone could break down in combat.

The most basic principle of the paradigm was to learn to identify and remove from the Army people with "weak nervous systems" or exceptional dysfunctional responses to fear and anxiety. There was very little understanding of how events and the environment could alter the processes of the brain and the body, change human behavior, and produce those real physical and psychological ailments, which are today referred to as stress responses. In this light, past attempts to grapple with the symptoms of shell shock and war neurosis were examined. The quests to define the causes of war neuroses were also undergirded by economic concerns. In the United States, Britain, France, and Germany, large numbers of veterans sought treatment at medical facilities and claimed pensions based upon a wide array of physical and psychological symptoms claimed to be the result of shell shock or combat trauma. The costs were considered staggering and avoidable if proper selection was used.[3]

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[2]Those deemed "weak" by these tests were mostly blacks, Jews, Southern Europeans, and Slavs.

[3]See the references to Sullivan, below, and Benton, above.

MIND-BODY DICHOTOMY

In addition to the "psychologization" of Western thinking about the sources of both normal and aberrant behavior,[4] new approaches were being developed to address the effects of external events upon the internal dynamics of the brain and body. While a number of medical observers during and immediately after World War I hypothesized that combat experiences led to alterations in bodily physiology that sustained both mental and physical symptoms for some soldiers, there was little evidence about how this might have occurred. The "hows" were addressed, albeit in preliminary fashion, by the work of Walter Cannon and Hans Selye.

Walter Cannon[5] was the first to look experimentally and in-depth at the effects of emotions on the body. Cannon discovered that strong emotions release endocrine secretions (such as epinephrine and norepinephrine) which have major effects on heart rate, blood pressure, etc. The body's systems respond with significant physiological alterations of normal function as a reflection of strong emotions being generated by external events and experiences. Cannon's work represented the first true break with the Cartesian mind-body dichotomy that had formed the background of the Western view of human status and behavior. Cannon took the first tentative steps toward understanding the brain as a mechanism by which signals generated by a life experience are converted into internal physiological signals that alter physical bodily states and the effects of which are then fed back to further alter psychological states.

Hans Selye[6] developed the first cogent approach to the problem of stress. He examined what happened within the body when a subject was faced with highly stressful demands, particularly those that fall under the rubric of the fight-or-flight paradigm. Selye pointed out that the physical responses to stress (i.e., the outpouring of adrenaline and other secretions, the rise in heart rate and blood pressure, and the general bodily preparedness to cope with assault or insult) were evolutionarily necessary for survival and were normal and reasonable when they were directly linked to a threat. Based upon the classical "fright-flight" model, Selye called these responses the "general adaptational syndrome." Selye noted when such responses continued well after the threat situation had dissipated, the normal stress response becomes abnormal and progresses to chronic distress, with potential long-term detrimental effects.

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[4]Which drew on elements as diverse as psychoanalysis and Watsonian behaviorism.

[5]A professor of physiology at Harvard.

[6]Selye began his work in Vienna in the 1930s before moving to Toronto as a refugee from the Nazis.

DIAGNOSIS AND CLASSIFICATION

It is important to note that throughout this period and, in fact, throughout World War II no fixed, universally agreed upon system of diagnosis and classification existed. (One did not exist until the publication of *Diagnostic and Statistical Manual I* by the American Psychiatric Association in 1951 and that certainly did not debut to universal agreement.) Most psychiatric disorders can be classified only based upon symptoms (see for example, Gelder, Gath, and Mayou, 1991). Diagnostic judgments, labels, and allocations were often different from practitioner to practitioner depending upon training, experience, and the "school" of psychiatry with which the physician was identified. Dispositional diagnoses and choices of treatment might not be at all consonant between equally well-trained psychiatrists. As in any scheme of diagnostic classification not based on hard pathophysiological findings, there was wide room for fluidity of choice and difference in judgment.

Chapter Seven

WORLD WAR II

World War II marked a watershed in both the approaches to and understanding of the psychological consequences of combat and the war zone. In contrast to previous thinking and concepts, it became clear that while some men were more vulnerable to the development of psychological symptoms and syndromes, all men, no matter how brave or courageous, were vulnerable. World War II began with major reliance on psychological screening. It ended denying the efficacy of screening, contending that "every man has his breaking point," crystallizing the concept of stress as a psychophysiological reality. When soldiers were believed to have predispositions and special vulnerabilities, the most commonly invoked models continued to be drawn from the wellsprings of psychoanalytic thought, as determined by personality patterns established in infancy and early childhood. Ultimately, during World War II, the dynamics of soldier breakdown and symptom formation shifted from the previous "biological" perception (primarily a function of constitutional nervous system inadequacy) to the appreciation of the battlefield and war zone as stressors that interact with the soldiers and their social environment to alter psychological and physiological behavior. It was established that for most soldiers, external events had internal consequences and that, in part, postevent expectations and beliefs about cause and outcome could shape such consequences.

SELECTION

The military and the nation went into World War II believing almost implicitly that soldier selection would be the solution to all military mental health problems. When selective service came into being, the Veterans Administration "exerted pressure to focus the attention of selective service on the stupendous burden from neuropsychiatric problems which resulted from the last conscription [World War I]" (Sullivan, 1964, p. 126). Sullivan was the first psychiatric adviser to the Selective Service System. He was deeply concerned by the economic costs of neuropsychiatric casualties:

> The taxpayers of the United States have spent on neuropsychiatric disabilities related to the conscription and war of 1917–1918, 946-odd million dollars. The cost is still going up. Everything else has gone down . . . but the neuropsychiatric load goes up steadily, in its magnitude, year by year (Sullivan, 1964, p. 129).

He was also concerned about how soldiers who had become neuropsychiatric patients negatively affected others in their units:

> The disorder, inefficiency, and grave risk which these patients caused in combat units were very sharply impressed on everyone serving in combat troops in the last war; and we have every reason to believe that the fundamental stability of American youth has diminished and that many of the strains of warfare have increased (Sullivan, 1964, p. 129).

Sullivan saw massive psychiatric screening and "selection out" as the primary solutions to both the severe wartime problem of having psychologically vulnerable soldiers in units and to the extreme economic cost of long-term treatment for masses of neuropsychiatric patients.[1] While Sullivan advocated the use of the psychiatric screening interview to select out the vulnerable and the unfit, he did not think it would screen out more than 50 percent of those who would ultimately become psychiatric problems for the military. He was most concerned with those who might develop long-term psychoses. Ultimately, Sullivan was dropped as psychiatric consultant, but the concept of screening and selecting out the vulnerable remained a core element of the Selective Service System.

While the psychiatric screening was cursory, during World War II massive screening did take place as part of the Selective Service assessment and induction system. Initially, 1,681,000 men were rejected and excluded from the draft for emotional, mental, or educational disorders or deficiencies. Between 1942 and 1945 over 500,000 (Ginzberg, 1959) more were separated from the Army on psychiatric or behavioral grounds. In addition to these separations, a constant and consistent process of weeding out men from combat units took place at training centers, during divisional training, upon notice of embarkation for an overseas theater, and in the staging areas prior to deployment into battle. Almost all World War II division psychiatrists cite such precombat screening as one of their ongoing tasks. It is impossible to know the actual numbers of soldiers that were considered potentially vulnerable, since most were transferred to support and service functions and not actually discharged.

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[1]His arguments are of great interest because they illuminate the conceptual structure of the time held by an advanced psychiatric thinker—the father of interpersonal and social psychiatry.

COMBAT REALITIES AND THE FAILURE OF SELECTION

When the United States entered World War II, little preparation (beyond the concept of selection) had been done to deal with psychological casualties. Despite the use of selection, during World War II, the United States suffered an average of one diagnosed psychological casualty for every four wounded.[2] Despite the use of screening, the first two major commitments of American forces to battle made it clear that the U.S. forces were going to experience many psychiatric casualties during the war. The battle of Guadalcanal in the Pacific and the battles of the Kasserine and Faid passes in North Africa generated large numbers of psychiatric casualties.

Guadalcanal produced extraordinary levels of psychiatric casualties in the First Marine division and the Army units sent in to reinforce it. Rosner (1944) reported that 40 percent of the casualties evacuated from Guadalcanal "suffered from disabling neuro-mental disease" (compared with only 5 percent following the attack on Pearl Harbor). He describes the psychiatric casualties as

> reduced to a pitiable state of military ineffectiveness after prolonged exposure under severest tropical conditions to exhaustion, fear, malaria, and sudden violent death at the hands of an insidious and ruthless enemy (Rosner, 1944, p. 770).

Rosner felt that the consequences of Guadalcanal presented a specific challenge to the idea of predisposed psychological vulnerability that developed during the interwar years:

> Since World War I neurosis incurred in wartime or under combat conditions has come to be considered pre-conditioned and non-specific. The term "shell shock" for example is supplanted by the less suggestive and less militant "anxiety neurosis"; similarly "gas neurosis" becomes "acute psychoneurotic respiratory syndrome." There has been a de-emphasis of exciting cause and reemphasis of individual personality and other predisposition factors . . . [however] . . . a condition designated by the title "Guadalcanal Neurosis" [indicates that] . . . the brutal combat situation responsible for this interesting psychiatric aberration, however, redirects attention to the importance of exciting cause (Rosner, 1944, p. 774).

Rosner went on to attempt to distinguish between those soldiers who broke down early in their military careers or in the course of battle because of predispositional factors, and those who broke down as a consequence of continuing battle experiences and had no detectable predispositional factors.

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[2]According to estimates made by Albert Glass and others, four times as many were treated locally and never recorded as psychological casualties.

Reviewing the issue of psychiatric casualties from Guadalcanal in a 1946 article, Theodore Lidz, an Army psychiatrist who had treated evacuees in the Pacific, noted that "even the non-psychiatric casualties showed emotional reactions of a severity that would have been considered incapacitating in later campaigns." In addition to anxiety and depression, symptoms included "headaches, anorexia, . . . tremors, insomnia, nightmares and palpitation [which] were individual symptoms or could all be present in one man." Trying to understand what had contributed to the tremendous psychiatric casualty levels of this prolonged battle, Lidz (1946, p. 194) concluded that:

> there were many factors preying on the emotional stability of the men. The tension of suspense in one form or another was among the most serious; waiting to be killed, for death had begun to seem inevitable to many, and some walked out to meet it rather than continue to endure the unbearable waiting; waiting for the next air raid and the minutes of trembling after the final warning; waiting for the relief ships; waiting without acting through the jungle nights, listening for the sounds of Japs crawling, or for the sudden noise that might herald an attack; waiting even in sleep for the many warning sounds. The fears were numerous: of death, of permanent crippling, of capture and torture, of ultimate defeat in a war that was starting so badly . . . [as well as] fear of cowardice . . . and of madness.

As he cogently put it, "In this first offensive battle of the war it became clear that the incapacitating wound could arrive with the mail from home . . . the loss of a girlfriend, the fight with parents" (Lidz, 1946, p. 195).

In contrast to Rosner, Lidz felt that all of those who became psychological casualties had predisposing factors in their preservice family relationships and life courses. These men he felt would have survived the trauma of briefer and less intense combat and indeed would have behaved, as they did initially on Guadalcanal, heroically. The weaknesses in their personality structures and inner resources combined with the continuous daily trauma of war to ultimately undo them. In Lidz's thinking, a single traumatic combat event was meaningless; rather, it was the cumulative stress of many such events that produced psychological breakdown.

The next great wave of psychiatric casualties came shortly after Guadalcanal, in the battle of the Kasserine and Faid Passes in North Africa. Here, a poorly trained, equipped, and led American division met Rommel's superior Africa Corps. An American participant noted the feeling of absolute helplessness as he watched shells from his unit's short-barreled low-velocity 75mm howitzers bounce off the attacking German Panzers. The American division experienced an exceptionally high proportion of psychiatric casualties, almost equal to the number of killed and wounded. Men were overwhelmed by the shattering reality when their own poorly trained and equipped troops met a highly skilled and better-equipped enemy. This breakdown of a division, depicted in the opening

of the movie *Patton*, was a cause of great concern to senior Army commanders. As with Guadalcanal, the United States had "selected out" those assumed to be most vulnerable, but that did not prevent large numbers of psychological casualties.

It was clear that all of the lessons of World War I had essentially been forgotten, particularly in terms of fielding organizations to deal with widespread psychological dysfunction. Casualties were being evacuated directly back to the United States. Among the questions asked were: What happened? What maintains soldiers in the combat zone and in combat? A psychiatrist, Herbert X. Spiegel, was sent to Tunisia to evaluate the situation and to develop preventive recommendations. Spiegel's observations set the stage for much of the thinking that became central to military psychiatry and determined the criticality of the primary group in maintaining soldier mental health and buffering the effects of the stresses of the battlefield and events at home. Spiegel (1944, pp. 311–312) noted:

> If abstract ideas—hate or desire to kill—did not serve as strong motivating forces, then what did serve them in the critical time? . . . It seemed to me that the drive was more a positive than a negative one. It was love more than hate. Love manifested by 1) regard for their comrades who shared the same dangers, 2) respect for their platoon leader or company commander who led them wisely and backed them with everything at his command, 3) concern for their reputation with their commander and leaders, and 4) an urge to contribute to the task and success of their group and unit. . . . They seemed to be fighting for somebody rather than against somebody.
>
> If that be so, what practical significance does it have to psychiatrists? Let us first consider the psychiatric casualties. A considerable amount of the ordinary combat accomplishment was performed by ordinary men experiencing rather severe anxiety.
>
> The overt symptoms varied from a feeling of tension, dry mouth, palpitation, perhaps mild tremors, through a more marked tension with increasing sensitivity to noises of any kind, to the extreme of gross trembling, screaming, crying, running about in confusion, and almost complete disorientation. These extreme cases were not common. . . . If there was anything that appeared to be common to all these states besides fear, it was the factor of fatigue or exhaustion. Fatigue not only as a result of physical exertion and lack of restful sleep, but also as a result of a constant state of tension and anxiety.
>
> Another component was something . . . which . . . might be referred to as the X factor. It was something which corresponds to whatever courage is; something which, when present, indicated good morale . . . it was influenced greatly by devotion to their group or unit, by regard for their leader, and by conviction for their cause. It seems to explain why a tired, uninspired, disgusted soldier had the clinical appearance of an anxiety state. It seemed to explain why some units could outdo others; it seemed to aid in controlling the ever present fear; and it seemed to aid in resisting fatigue. . . . Here was a critical, vulnerable and, to be

> precise, an easily influenced component that often decided whether or not a man would be overwhelmed by his fear, anxiety, or fatigue. Here was a factor that decided whether or not a man became a psychiatric casualty.

THE ROLE OF THE GROUP

Spiegel's observations became the hallmark of preventive psychiatric thinking later in World War II. The primary mediating structure that enabled the soldier to cope with stress to prevent breakdown and longer-term psychological damage was the support provided by the soldier's group, particularly the combat or task group and its immediate leadership. This group structure rested upon relationships within the primary group (i.e., the crew or squad nested in those relationships of the platoon and of the company) and was most protective when coupled with trust and confidence in the relationship with unit leaders at each level.[3] Where there were no strong primary group affiliations, the potential for breakdown was very high. Where there was a real break between leaders and led, a lack of trust or a lack of communication, the potential for breakdown was even higher. As pointed out earlier, a certain amount of the psychological sustaining power of the group was undoubtedly due to the evolution of tactics and weaponry. The establishment of companies, platoons, and squads as maneuver elements (as opposed to the mass of the "line of battle") endowed these groups with new value to the soldier in combat. A soldier's life and survival was now in the hands of a small interdependent group. Decisions made by his sergeants, lieutenants, and captains now had determining power far beyond any they might have exercised in the past.

Glass (1973, p. 995), who became the dominant figure in military psychiatry for more than two decades after the war, summed up the powerful effects of these observations:

> Perhaps the most significant contribution of World War II military psychiatry was recognition of the sustaining influence of the small combat group or of particular members thereof, variously termed "group identification," "group cohesiveness," "the buddy system," and "leadership." This was also operative in non-combat situations. Repeated observations indicated that the absence or inadequacy of such sustaining influences or their disruption during combat was mainly responsible for psychiatric breakdown in battle. These group or relationship phenomena explained marked differences in the psychiatric casualty rates of various units who were exposed to a similar intensity of battle stress. The frequency of psychiatric disorders seemed to be more related to the characteristics of the group than to the character traits of the involved individuals. Thus World War II clearly showed that interpersonal relationships and other

[3]This relationship is characterized by implicit *agape*-like love between the members of a good military unit.

> social and situational circumstances were at least as important as personality configuration or individual assets and liabilities in the effectiveness of coping behavior.

It is clear that World War II marked an extraordinary paradigmatic shift from a doctrine of vulnerability based upon constitutional and inherited factors to one based almost entirely upon environmental determinacy. In a sense, a wide-scale leveling of the "personality/constitutional–predispositional" playing field occurred. It was agreed that a modest proportion of men bore psychic wounds from their past that made them exceptionally vulnerable and that these men usually broke down very quickly in training or in the initial commitment to battle. As for the rest, the model adopted fit the democratic values that underlay our national commitment to the war. In general, all men were moderately equally endowed to bear the vicissitudes of war, but all were behaviorally and psychophysiologically "plastic." Each was at risk for being stressed by the strains, fears, and anxieties of combat, the combat zone, separation from family, etc., to a point of possible breakdown or symptomatic expression. It must be remembered that where scientifically rigorous chains of causality, such as smallpox virus leading directly to smallpox, do not exist we ordinarily reason from situational and correlational determinants. When men whose bravery in past combat and whose lack of prior asserted or recorded psychiatric problems broke down, the obvious correlates of phenomena that contributed were environmental. The specious racism of the eugenics movement had so tainted consideration of biological factors that they were looked upon askance by much of the medical community. In addition, in our national dialogue, the sacrifices of brave men who suffered combat fatigue were not to be stigmatized as involving individual constitutional weaknesses—as General Patton discovered to his severe discomfort.

Thus the real predisposing factors were seen not as internal to the men themselves but as external and environmental. The following are some of these factors: threat—the erosive anxiety that comes from being in a situation where ones life is in danger, where people (the enemy) are trying to kill you, either directly in firefights or with the more random and the more difficult-to-defend-against agencies of bombs and artillery; primitive living conditions—soldiers often bed down in a hole in the ground and may not have access to latrines; hunger and thirst abated only by unappetizing combat rations; periods of intense fear alternating with periods of boredom; disease and accident; grief over the loss of buddies; anxiety about events at home; and, above all, interactions with those in the unit and the unit climate.

The power of the unit and of organizational climate can be measured by comparing soldier breakdown rates for different regiments and divisions engaged in equivalent combat scenarios. Psychological casualties ranged from 3 percent to

54 percent. The 442nd Regimental Combat Team[4] had almost no psychiatric casualties throughout the Italian and German campaigns. In contrast, the 24th and 43rd Divisions in the Pacific Theater had major and chronic problems with combat stress and general psychiatric casualties. The 24th Division, which had been responsible for the defense of Oahu during Pearl Harbor, seemed to function as if it were under the perpetual stigma of failure and incompetence. In addition to large numbers of psychiatric casualties in its first campaign, an unusual amount of situational homosexuality during its deployment as well as extremely high levels of sick call and somatic symptoms characterized the division. The 43rd Division, which was characterized by poor morale and leadership problems, lost almost 10 percent of its manpower as psychiatric casualties in New Georgia. In combat, psychiatric breakdown appeared to be contagious—mass breakdown occurred among small groups, such as infantry squads. The relationship between the pattern of breakdown and the divisions' organizational problems is indicated by the fact that the number evacuated from each company was directly proportional to the number of unit leaders evacuated (see Marlowe, 1986). In this latter case, as Coleman (1973, p. 637) pointed out, this underlined "again the paramount importance of qualified combat leadership in maintaining morale and preventing combat disturbances."

BATTLE FATIGUE/COMBAT FATIGUE

In response to the belief of universal vulnerability, the U.S. Army adopted the official slogan "Every Man Has His Breaking Point," with respect to the problem of combat stress or, as it became popularly known, "combat fatigue" or "battle fatigue." It was established that even the bravest and strongest people exposed to combat for a long enough period would break down. The legitimization of psychological or behavioral breakdown led to a shift in what might be termed the "behavioral metaphors" used to express the consequences of stressful events. Psychological and behavioral symptoms became predominant. Physical symptoms remained, but they tended to be less-dramatic, chronic discomforts rather than disabling ones. Weinstein,[5] who commanded the 601st Neuropsychiatric Unit, which supported the 5th Army in Italy, estimated that some 15 percent to 20 percent of patients suffered conversion or equivalent symptoms. The drop in the commonality of conversion reactions was not, however, universal. They remained the dominant symptoms of breakdown in elite organizations such as the Rangers and in the airborne divisions. In units that set a cul-

[4]This unit was composed primarily of Nisei from Hawaii and relocation centers and was the most decorated unit in the U.S. Army.

[5]Personal communication with Edwin Weinstein, M.D., 1995.

tural premium upon psychological as well as physical toughness, psychological symptomatic expression was far less acceptable than in ordinary infantry divisions.[6]

The issue of culturally and socially acceptable metaphors as aspects of the expression of illness is one that remains difficult for some to grasp. The "pure disease medical model" (i.e., that model in which symptoms are the fixed and invariant expression of the disease entity—be it pathogen, toxin, or malignancy) has truth and utility but it is a *limited* truth and utility when dealing with symptomatic expressions of the wider category of "illness." There remains a vast part of the spectrum of "illness"—the individual and cultural expression of the perceived disease state—in which symptomatic expression is channeled into a culturally agreed upon narrative acceptable in terms of the patient's role, status, and image.

In a simpler and more dramatic sense, the case of the Wehrmacht during World War II is illustrative. On a formal level, the Nazi government and military leadership banned the concept of psychological breakdown in the mode of shell shock, war neurosis, or battle fatigue. A behavioral breakdown or the exhibition of psychological symptoms other than those of "insanity" was considered both cowardly and treasonous.[7] The penalty for this, since it was often considered refusal to do ones duty in the face of the enemy, was often death or punishment. German military physicians were well aware of the realities of combat stress, but soldiers with combat-stress-induced illnesses were usually diagnosed in terms of physical symptoms with little or no reference to a psychological component (see Schneider, 1986). The pattern of symptomatic presentation of the combat stress reaction thus tended to be dissimilar compared with that of the U.S. or British forces even though the basic ailment was the same.

The overwhelming focus of military psychiatry on the problem of combat fatigue operated throughout the war and for decades into the future, diminishing concern about other psychologically relevant phenomena affecting troops during deployment. The reason was quite simple—strategy and tactics focused military concern upon those who actually carried the war to the enemy, and these soldiers had rapidly demonstrated that they were the group most vulnerable to breakdown during or following combat. Well over 90 percent of all combat fatigue cases came from infantry maneuver regiments, followed by more modest numbers from armor and even fewer from artillery (see Mullins and Glass, 1973).

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[6]The reality of battle fatigue was certainly not universally accepted within the allied forces. The infamous incident in which General George Patton slapped a hospitalized soldier presumably suffering combat fatigue is one well-known instance.

[7]The phrase used was *ohne fuehrergeist.*

In the mid-century period of mass armies engaged in extensive and intensive ground war, large drafts of manpower were critical to maintaining the war effort. Due to selection processes, combat losses, and demands of competing theaters, as well as the forces required to maintain a massive logistics effort, troops were in short supply. By the later part of 1944, the European Theater of Operations was scraping the "bottom of barrel" for replacements. This fact led to the termination of the Army Specialized Training Program, designed to continue the university education of those in "vital" specialties and their subsequent rapid movement to Europe as infantry replacements. Some infantry regiments were suffering casualty rates of 1,600 per thousand per year. The only nonland forces that suffered equivalent levels of behavioral and psychophysiological breakdown were the heavy bomber forces, particularly the 8th Air Force. Their air war, with casualty rates extending from 15 to 40 percent of those involved in deep penetration raids, shared the traumatic intensity of ground warfare (see Mullins and Glass, 1973). In this situation, combat fatigue losses represented a major problem. Yet, it is important in looking at the war-related problems of the second half of the 20th century, and in particular those of the Gulf War, to realize the extent that other elements contributed to, and in a number of cases drove, psychological, psychosocial, and stress-based illness.

A NONCOMBAT HYSTERIFORM BEHAVIORAL EPIDEMIC: *THE CASE OF ATABRINE*

A primary example (and one that has resonance today in terms of a psychosocially structured, rumor-driven series of events with extreme medical and behavioral consequences) was the Atabrine/Mepacrine problem of World War II, which perhaps best illustrates the effect of belief on behavior and illness. Compliance with taking Atabrine/Mepacrine, a synthetic antimalaria drug,[8] was persistently undermined by a combination of moderate side effects and a continual barrage of rumor and folklore passed among soldiers. As Field Marshall Slim (1956, p. 180), the overall commander of the China-Burma-India theater described the phenomenon:

> When Mepacrine was first introduced and turned men a jaundiced yellow, there was the usual whispering campaign among troops that greets every new remedy—the drug would render them impotent—so, often the little tablet was not swallowed.

Noncompliance had significant deleterious tactical effects. The consequences of these rumors and beliefs were pointed out by W. J. Officer (1969, p. 274):

[8]Taking Atabrine/Mepacrine was essential because of the loss of natural sources of Quinine in Southeast Asian plantations.

> The periodic rises in the incidence of malaria occurring at intervals of six weeks were very successfully overcome by increasing the dosage to three tablets per diem for 5 days before they were expected. . . . In spite of this large intake of Mepacrine over a prolonged period, no toxic effects were recorded, although some individuals exhibited an idiosyncrasy to it at the commencement and required quinine for suppression.
>
> Unfortunately, there was a somewhat widespread belief that Mepacrine produced impotence, and in one battalion the administration of the drug was suspended before the troops went into action as it was considered by the combatant officers to reduce the fighting efficiency of the unit. As such fallacies have a tendency to spread rapidly and become exaggerated and gain greater credence during circulation, every opportunity must be seized to discredit them.

Over and over again in the Burma campaign, the issue of "Atabrine discipline" (that is, compliance with a standardized regimen of Atabrine intake) played a central role in the medical and tactical breakdown of forces in the theater because it was enmeshed in rumor, folklore, and distrust. For Merrill's Marauders—the 5307th Provisional Composite Unit, the American deep penetration counterpart to the Chindits—noncompliance with the Atabrine regimen was cited as a key factor in the unit's disintegration:

> Suppressive practices apparently held up well until the battle of Nphum Ga. By then some cases were "breaking through" on the march, and they became very numerous during and immediately after the siege. Evacuations and medication produced some relief. But as the troops struggled over the trail to Myitkyina and lost momentum in the fight for the town, malaria overwhelmed the force.
>
> The most probable cause of the outbreak was a serious breach in Atabrine suppressive discipline. In the midst of a crisis in morale such an explanation became especially convincing.
>
> The outbreak at Nphum Ga, however, revived old doubts [about the efficacy of Atabrine].
>
> It is doubtful whether the command and the medical establishment ever regained control of the situation. Some semblance of Atabrine discipline had been reinstated before the march to Myitkyina began. But "breakthroughs" and new cases immediately appeared again. Those who did not fall by the wayside with malaria were thoroughly ill when they staggered into the aid stations at Myitkyina. Sent off after the usual onsite treatment, they soon returned as sick as ever. Outraged by restrictions on evacuation and the pressure to continue the campaign, genuinely dazed with fatigue and suffering from other diseases, more and more men repudiated Atabrine therapy. The sicker they became, the lower fell their morale. The lower their morale, the less hope there was of restoring Atabrine discipline and curbing malaria.
>
> Thus were the Marauders destroyed, not by misleadership . . . nor by the enemy. (Hopkins, Stelling, and Tracy, 1969, pp. 394–395).

Rumor, folk belief, fear, and anxiety, reinforced by the overt side effects of Atabrine, all combined in the Burma tactical scenario to undermine compliance and destroy Atabrine discipline. Burma was not unique: Equivalent problems with compliance were seen in North Africa, the Mediterranean, and the South Pacific. Describing the early efforts of suppression in the South Pacific, Baker (1963, p. 465) pointed out that, "with these early efforts at suppressive drug control, malaria rates of combat troops in the range of 1,500 to 2,000 per thousand troops per annum were common." Again, the problem of providing successful suppression with Atabrine had little to do with its ultimate efficacy, which was established, but with the perception of the drug.[9] Baker (1963, p. 466) continues:

> When Atabrine was initially administered it frequently led to nausea, vomiting, and diarrhea. This was particularly likely to occur when the administration was begun on shipboard, where anxiety and seasickness contributed to the prevalence of gastrointestinal upsets. Confusion, too, between the skin discoloration due to Atabrine and cases of infectious hepatitis [a confusion added to by some medical officers] increased fear of the drug. There were rumors that Atabrine caused impotence. In addition soldiers soon learned that if they acquired malaria they would be removed from combat areas to more adequate hospital facilities. Altogether, the value and safety of administration of this drug was not wholeheartedly accepted by the troops, and forward medical officers themselves became lukewarm regarding it. . . . The result of all of this was poor discipline in the use of suppressive therapy and consequent failure in control of clinical malaria.

Thus, rumor, folklore, and myth, particularly when combined with perceivable side effects and possible future reproductive consequences, can adversely affect compliance with necessary or recommended prophylactic drug regimens, alter behavior, or generate or exacerbate functional physical symptoms—particularly those reputed to be created by the agent involved.[10] These phenomena, involving attribution of feared future effects to medication, appear to prefigure the same sorts of responses to chloroquine-primaquine in Vietnam and to several agents (including anthrax vaccine and pyridostygmine) given during the Gulf War.

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[9]The medical community compounded the Atabrine/Mepacrine issue by making statements of mistrust, despite the fact that it represented the only malaria suppressant (other than limited supplies of quinine) available to U.S. and allied forces.

[10]Problems like those seen with Atabrine/Mepacrine in World War II also surfaced during the Vietnam conflict. There were many reports of soldiers refusing to take the chloroquine-primaquine antimalarial drugs. In addition to beliefs that it would bring on impotence and other untoward side effects, it was credited with causing genetic damage that would lead to severe birth defects in future children conceived by soldiers.

OTHER NON-BATTLE-FATIGUE PSYCHOLOGICALLY IMPLICATED DISORDERS

In addition to the usual symptoms of battle fatigue,[11] the war also generated other psychophysiological and psychosomatic disorders. Many of these were the same disorders that characterized ailments of troops in World War I. Lewis and Engel (1954) note that neurasthenia (neurocirculatory asthenia) was more common among troops in World War II than in World War I. They also point out (p. 139) that there appeared to be predisposing factors for a range of physical ailments causing hospitalization. Based on the data, they assert that, "a high incidence of personality disorders characterized patients hospitalized for acute upper respiratory infections and for hemorrhoids" and that "those with high neurotic potential, as shown by Cornell Service Index studies, were hospitalized more frequently than the average." Almost all functional disorders appeared to have had fatigue as an overriding characteristic. Gastrointestinal disorders[12] were epidemic in both combat and noncombat soldiers. Psychogenic rheumatism and skin reactions[13] were also common, as was headache. The observation was made that levels of somatization—i.e., the reporting of physical symptoms—among troops in combat line organizations were proportional to levels of psychiatric casualties in combat and the "climate" of the units involved (Kaufman, 1947).

It was observed that in many situations, particularly those involving some level of social isolation, climatic stressors, and environmental austerity, support forces were at significant risk for "neurotic" patterns of response, particularly for the generation of somatic symptoms and other physical expressions of illness. These medical problems were often accompanied by rises in the level of psychiatric referrals and by such behavioral phenomena as rises in situational homosexuality. This was particularly true of troops manning the logistical pipelines supporting the forward forces in such places as the South and Southwest Pacific and the Persian Gulf. (See, for example, Mullins and Glass, 1973.) Emotional problems and minor illnesses were amplified in support forces stationed in such urban centers as Naples, because of "relative deprivation" (that is, living in an environment that was in some ways "out of the war" and conceptually more like home). These living conditions appeared to markedly increase the stressfulness of separation from home and family, food quality, and lack of entertainment. The observation was sometimes made that stressors that ap-

[11]Symptoms included trembling, palpitations, narrowing of the visual field, startle response, fatigue and weakness causing failure to continue one's duties, problems with memory, etc.

[12]Or as it was termed then, "gastrointestinal neuroses." These were almost always prolonged gastrointestinal disorders without peptic or duodenal ulcer.

[13]Skin diseases included neurodermatitis, urticaria, pruritis, etc.

peared to be trivial for combat troops in the line in Italy and elsewhere were major chronic stressors for rear echelon personnel (Stouffer, 1949).

One observation was made by almost all physicians who treated battle fatigue and psychogenic disorders: Patients with functional disorders tended to fix upon and continue to exhibit the symptoms of the disorders from the initial screening or diagnosis. This concept came to be known in medical sociology and social and military psychiatry as "labeling theory." Labeling theory was considered of paramount importance for treatment, symptom resolution, and limitation of disabilities to the short term rather than the long term.

Weinstein has noted that in the Italian theater, the most potent tool for alleviating the symptoms that might develop into battle fatigue was a simple and reasonable explanation of their source and normality. When it was explained to the soldier that a churning stomach, dry mouth, pounding heart, and trembling hands were normal ways the body responded to a situation of high apprehension and anxiety, the symptoms usually moderated as the soldier breathed a sigh of relief. He was not, after all, going mad or about to collapse from some terrible internal disorder.[14] When the soldier was told that he had an ailment of unknown origin, the symptoms tended to persist and amplify. The more attention paid to him by the medical system, the longer the patient moved through rearward and more-sophisticated medical echelons, the more intractable the symptoms would often become. Soldiers with cases of battle fatigue that might have been treated easily and readily in forward areas often became long-term psychiatric ward patients if evacuated to hospitals in the United States. Patients with physical symptoms often became chronic cases and had greater levels of disability when neither diagnosis, rest, nor medications relieved their symptoms, and in many cases amplified them. The role of interaction between the patient's expectations and the medical system's expectations became, once again, a significant contributing player to the course of the illness and its short-term or long-term outcome.

During World War II, the lessons of World War I with respect to the handling and treatment of combat psychiatric casualties (treat quickly, rest briefly, and explain and act with the expectation that the soldier will return to his unit) were initially forgotten. Soldiers and Marines who broke down during the early phases of World War II were usually evacuated, and many became long-term psychiatric patients. This situation was eventually remedied,[15] and ultimately, as in World War I, a wide variety of therapeutic modalities were utilized. These

[14]Personal communication with Edwin Weinstein, M.D., 1996.

[15]Following the debacle in North Africa, Hanson, Glass, and others recreated the forward-based psychiatric treatment models of World War I. The emphasis was on brief intervention psychotherapy, rest, a hot meal, and the concept of restoration.

included brief therapy, simple encouragement, hypnosis, and even sodium amytal usage. All worked to some degree, at least from the practitioner's viewpoint. If there was a common underpinning, it lay in the trust soldiers had in the medical system and in the physicians who were treating them, and in the belief of both soldiers and practitioners that the therapy would work. As *The American Soldier* studies point out, this belief in the efficacy of the military medical system was a salient factor in maintaining morale (see Stouffer et al., 1949).

In addition to the important principles of not labeling soldiers with a psychiatric or physical diagnosis and not withdrawing them from combat or the combat zone, another principle of treatment emerged in World War II—never, if at all possible, let troops know what the range of symptoms of psychological disorders were.[16] Indeed, the terms *battle fatigue* or *combat fatigue* themselves were picked because they were essentially neutral and did not indicate the specific elements of a syndrome and were considered to be nonstigmatizing. It was assumed that the underlying psychological dynamic, derived in good part from psychoanalytic thought, was the "primitive" desire of the soldier to find a legitimate pathway through which to withdraw himself from the terrible threat of death and dismemberment presented by the combat zone.[17] Because most men did not want to die or be maimed, many military psychiatrists felt that, given the strength of the "survival instinct," if soldiers knew what symptoms would lead to a diagnosis of combat fatigue, these symptoms would be produced (from subconscious or unconscious motivations) by many soldiers and there would be epidemics of battle fatigue. During World War II, it was reported that in areas where the symptoms were widely known by the troops, there were large increases in the number of soldiers coming in for treatment.

We do not know whether this supposition, grounded in long-standing psychological beliefs, was true. The only tests of it came almost 50 years later in a markedly changed military and a changed culture when in Panama and in the Persian Gulf every soldier had access to materials delineating all of the symptoms of combat stress. These were, however, short wars with combat dramatically different from the grinding battles of World War II and Korea. We do know that these short wars produced no marked increase in the production of stress-related symptoms or patients during the initial period of commitment to battle. In fact, there were proportionally fewer than during past wars. This may well be analogous to Weinstein's observations, reflecting widespread knowledge of the "normalcy" of combat stress.

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[16]Personal communication with Albert J. Glass, 1982.

[17]This was perceived, in part in terms of the Freudian concept of *Thanatos,* as the primary drive informing the soldiers' quest for survival.

It should be noted that the emphasis on psychological dysfunction as a legitimate pathway out of the combat zone served to mask the roles played by both wounding and disease in the genesis of psychological dysfunction. World War II produced, at least among the American forces, the widespread myth of the "million dollar" wound: a wound severe enough to remove the soldier permanently from the combat zone, but not severe enough to maim or disable. The "million dollar wound" and its disease analogs were seen by psychiatrists as legitimating the soldier's withdrawal from battle and abandonment of his primary group. Therefore, it precluded development of the symptoms of combat fatigue or other psychological symptoms. This masking of the physical-psychological relationship was unfortunate and led to a lack of focus in the many reports of combat fatigue symptoms of the wounded and the physically ill (see Lewis and Engel, 1954). It also contributed to the establishment of an implicit model in which the "psychological" was seen as driving the "psychosomatic" consequences of experiences in the combat zone. But it did not particularly attend specifically to the interaction and interdependency of mental and physical health.

THE WORLD WAR II PARADIGM SHIFT

The paradigm shift that took place during World War II was one that moved from causation based upon constitutional predisposition in markedly vulnerable population subsets to the concept that all normal human beings could break down. Any soldier could be made behaviorally dysfunctional as well as physically symptomatic by the stresses, anxieties, and strains affecting him in the war zone environment. Human response to the extreme stresses of the combat environment was seen as variable. Some soldiers fell prey to the stresses of combat or even training sooner than others did. In time however all were ultimately vulnerable. Combat events and other environmental stresses were perceived as altering the internal environment of the body in ways that were destructive to mental and physical health. Prolonged combat-environment exposure could alter the human capacity to maintain a reasonable level of performance, and in such situations, the power to maintain physical and mental homeostasis was seen as limited. This led to the belief that all combatants would ultimately become psychological casualties. Projected curves demonstrating the relationship of force sustainment to intensity of battle were developed (see Swank and Marchand, 1946; Swank, 1949; and Appel and Beebe, 1946), and in all, the curve extrapolated to a "real point" at which 100 percent of the force would have become combat psychiatric casualties. The three most pertinent mediating variables were seen as the intensity of combat, the cohesion of the unit, and normal human variability. Breakdown, or the exhibition of either stress-related physical or psychological symptoms, was not simply due to

genetics, the early childhood experiences, or the ethnic group membership of the soldier as had been believed by many in the past.

Despite the asserted ease of treatment and the comparatively radical environmental situationalism, a profound concern developed over the possibility that soldiers might suffer the kinds of long-term stress-related psychological disabling disorders that had been seen after World War I and that had been so costly in both economic and human terms. This possibility led to the passing of the National Mental Health Act in 1945, which provided for a vast expansion of mental health facilities, including the establishment of Veterans Administration "store-front" local treatment facilities to deal with the anticipated wave of mental health and adjustment problems of veterans.

Chapter Eight

POST–WORLD WAR II CONCEPTUAL DEVELOPMENTS

The postwar period, considered here as the end of World War II to the late 1960s,[1] saw a number of important developments. Initially many of the findings and observations made during World War II about the combat zone's power to generate psychological and psychophysiological consequences faded. Psychoanalytic thought and other depth psychological doctrines ascended. By the 1960s, however, these models began to shift toward a somewhat more biological doctrine as the first psychotropic medications became widely used. Some of the stigmatization of psychiatry and recourse to psychiatric treatment (in the military and society at large) may be due to the belief at the time that all the factors that contributed to psychologically related illnesses were the result of brain structure or brain chemistry. This is a proposition that might be interpreted by many as defining the afflicted individuals as physiologically weak or constitutionally disordered. Such an attribution would be seen as personally stigmatizing and demeaning by many people. If there is scientific truth to the proposition that symptomatic outcomes are not the simple result of constitutional differences but the result of complex and assaultive interactions between the environment and the individual, a better systematic foundation was needed to determine the biological effects of external events on the body to address the psychological consequences of combat. As the social and behavioral sciences began to integrate with medicine, appreciation grew regarding the complexities of patients, experiences, and presentation of illness. The simple disease-based medical model—look at the symptoms, seek the unique pathogen, treat with the appropriate medication—was demonstrated to be limited when multiple

[1] I do not address the Korean War as a separate entity because, from the point of view of concepts utilized and applied in respect to the psychological consequences of combat and deployment, it was simply an extension of the thinking and practice that characterized World War II. Its major importance may lie in the fact that the these concepts and the operational structure for handling and treating combat stress had been entirely forgotten when the war began. The tragic first months of the war saw the disruption and quasi–near destruction of the first force sent in—Task Force Smith—and a consequent outpouring of stress casualties. The Army wisely sent Albert J. Glass—the most aggressive military psychiatrist and systematizer of the previous war—to rectify the situation, which he did in short order.

causes were involved. Within military psychiatry, the concept of subpopulations of normal recruits without prior evidence of psychiatric dysfunction, whose members might be especially vulnerable to experiencing intense symptoms following exposure to major stressors, was discarded. Those who were to be selected out were the more overtly vulnerable.

One of the major scientific outcomes of this focus on the environment-individual interaction was the synthesis of the concept of stress as we have come to understand it today. This synthesis led to a break with the principles of psychoanalytically based psychosomatic medicine and psychogenic causality.[2] Psychogenic causality posited the origin of psychosomatic disorders primarily in psychological pathologies developed in early childhood intra-familial relationships. The symbolic importance of these relationships was associated with the symptoms generated or target organs affected. Throughout this period and for several decades afterward, such diseases as peptic ulcer, asthma, rheumatoid arthritis, colitis, dermatitis, hypertension, and hyperthyroidism were among those classified as psychosomatic. The major construct involved in this essentially Freudian vision of psychosomatic disorder was that of "specificity." As Mora (1974, p. 52) put it, investigators perceived that there was

> a definite correlation between each one of these conditions and a particular emotional conflict [for example, repressed hostility in hypertension]. . . . The presence of a particular preexisting organic vulnerability under conditions of stress has been assumed by practically everyone.

The widespread promulgation of the concept of specificity can be seen in the postwar editions of the *Cecil–Loeb Textbook of Medicine* (Beeson and McDermott, 1963), the most popular medical textbook in the United States. In Kolb's chapter (1963, p. 1717) on psychoneuroses, he notes, for example, that ulcerative colitis (now known to be an autoimmune disease) is exacerbated by stress:

> Such patients often have a strong need for protective care, this feeling arising from an early relationship with a dominating or rejecting and humiliating mother. The condition also develops in persons who were reared in families in which physical symptoms were a means of receiving preferential care.

We see equivalent specificity in his statements about the etiology of asthma, asthma attacks, and dermatological reactions.

> Asthma has as a major component an excessive and unresolved dependency problem. Asthmatic attacks are frequently precipitated by sudden intense emo-

[2]See, for example, Dunbar, 1943; and Alexander, 1943. See also the excellent chapter by Reiser, 1975.

> tional reactions developing from exposure to situations in which the sufferer is threatened, actually or symbolically, by separation from a mother figure.
>
> The skin is an important area for the expression of psycho-physiologic disturbances, serving as a contact point between the individual and the world. Psychic factors lie behind many of the skin disorders of both children and adults. In adults, neurodermatic excoriations are associated with the repression of anger. Events leading to expression of guilt and depression generally cause the exacerbation of continuous eruption. Itching and scratching occur often during attempts to repress resentment for the maternal figure or substitutes with whom the patient has a hostile, dependent relationship. Urticarial lesions may also develop from life situations that induce resentment and frustration as a consequence of some threat to an important dependency relationship (Kolb, 1963, p. 1718).

THE DEVELOPMENT OF THE CONTEMPORARY CONCEPT OF STRESS

However, late in periods of wartime, it usually became obvious that, for the vast majority of soldiers suffering the effects of combat fatigue or of prolonged exposure to the stresses of the combat theater or deployment, the symptoms and ailments that brought them first into contact with military physicians and then into Veterans Administration facilities were not "all in the mind." The observations made during the course of World War II, particularly in light of the "anti-predispositional" modes of thought adopted by leading military psychiatrists, presented a series of questions that deepened and broadened into a set of pathways for "stress" and its consequences. If psychosomatic illnesses were not the consequence of the transformation of present stresses into organs and organ systems that were preselected by early relationships—then what were they caused by? What were the mechanisms through which the brain, the central nervous system, and bodily physiology transformed external events into somatic illnesses? What were the interactions between bodily insults, emotional assaults, stresses, and the dynamics of human biology and psychology that could transform events such as minor ailments, exposure to prolonged stress, or combat trauma into long-term patterns of symptoms and/or dysfunction?

Building upon the experiences of troops in the war and the consequences of those events, investigators began to examine the relationship between stress and disease. They also analyzed both the protean and diverse nature of the stressors affecting people and the physiological and endocrinological dynamics of the human response to stress. Neurologist Harold Wolff (1953) created a wide-ranging, holistic, conceptual model grounded in the fundamentals of human evolutionary biology. As he put it:

> Man is further vulnerable because he is so constituted that he reacts not only to the actual existence of danger, but to threats and symbols of danger experi-

> enced in his past which call forth reactions little different from those to the assault itself. Since his adaptive and protective capacities are limited, a man's response to many sorts of noxious agents and threats may be similar, the form of the reaction to any one agent depending more on the individual's nature and past experience than upon the particular noxious agent evoking it. Moreover, because of its magnitude and duration, the adaptive-protective reaction may be far more damaging to the individual than the effects of the noxious agent *per se* (Wolff, 1953, p. 3; see also, Wolff, 1947).

Wolff (1953, p. 149) makes the following observations in his closing chapter that, I believe, still have great pertinence today:

> Owing to training and cultural pressures, an individual develops a more or less fixed idea of how he is expected to appear, behave, react and even feel. A man's reactions to what he perceives as dangerous are often out of keeping with his conception of what he "ought" to do. The threat and the subsequent conflict, often not fully recognized, thus persist and unsuitable protective reaction patterns may be evoked unwittingly.
>
> Such inadequate processes of defense and offense may lead to disastrous changes in function and structure. Furthermore, the continuing effort to achieve homeostasis through the use of unsuitable protective and adaptive patterns may lead to the destruction of the individual.

Wolff's work was paralleled by Selye's, which elaborated on stress concepts, the "nonspecificity" of the hormonal responses involved, and their overall consequences for the organism. Building upon Cannon's early work,[3] these new insights developed into the realm of psychoendocrinology.

Building upon this older work, new directions and pathways were open and charted. Discarding Selye's "general adaptational syndrome," researchers such as Mason described the way environmental stresses influenced specific hormones and differentially affected the organism. A good overview is provided in Mason (1975). As he put it:

> While much of medicine, with the ever increasing trend towards specialization, continues to pursue the course of viewing disease as a local or regional phenomenon, the opportunity is now open to pursue, at a new level of sophistication, *a view of many diseases as disorders of integration*. . . . The new knowledge that highly complicated psychological influences are superimposed upon the humoral machinery for endocrine regulation raises the possibility that disorders of bodily function may result when the more complex, and probably more fallible, psychological machinery, preempts, disrupts, or otherwise works at odds against the simpler, lower-level humoral machinery of endocrine regulation (Mason, 1975, pp. 575–576).

[3]And also on the salient work done by John Mason at the Walter Reed Army Institute of Research, from the early 1950s through the 1970s.

It is from this work that we might trace the evolution of the highly sophisticated neurobiology of today.

Two phenomena paralleled these developments concerning the concepts and consequences of stress within the scientific community. The first, and perhaps most salient, was the widespread diminishment within psychiatry of the construct of "present events" as a threat to the physical and mental health of the "normal" individual. Problems in the present were treated in terms of their roots in infancy and childhood and not in terms of contemporary events. The second phenomenon was a more subtle one: the rise of Skinner's[4] "operant" psychology. Operant ideas never achieved the widespread acceptance within medicine that psychoanalytic concepts did, nor did they become part of the common language of psychological belief. However, these ideas did have a powerful reinforcing effect on many of the constructs developed by military psychiatry during World War II. Skinner's model dispensed with the idea that the constitution or structure of operations inside the brain and the central nervous system (CNS) were related to the consequences of exposure to events. The brain and the CNS were to be treated as undifferentiated parts of a "black box." Response to events and sequelae were solely a product of the individual's past history of reinforcement and his present experience of events and the reinforcers attendant upon them.

The Skinnerian model implied even more total plasticity of response than the concept that "every man has his breaking point." Concepts of selection, save for those for officers and the most elite functions in the Army, were used judiciously. It was posited that soldiers who demonstrated flaws of behavior, performance, or character could be rehabilitated through the right kind of training and environmental manipulation. Attempts were even made to develop therapies that would reclaim diagnosed schizophrenics as productive soldiers (see, e.g., Artiss, 1959). In the period from the reinstitution of the draft (with the onset of the Korean War) through the early 1960s, this focus on purely extrinsic factors made a great deal of sense from a demographic viewpoint: The depression and the war years limited the pool of available manpower. Almost every "body" with the potential to serve was needed. Society could not afford the large number of those who would be turned away by any extensive selection system if the services were to be manned at the required levels.

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[4]B. F. Skinner, professor of experimental psychology at Harvard and the father of "operant" conditioning in psychology.

OTHER THEORETICAL DEVELOPMENTS BEARING ON THE PSYCHOGENIC AND PSYCHOSOMATIC CONSEQUENCES OF "BEING ILL"

The period of the 1950s and 1960s saw a number of other theoretical and conceptual developments of contemporary importance. Labeling theory (i.e., the consequences of being assigned publicly and interactively to a diagnostic category) became a matter of concern and study in medical sociology. Secondary social consequences of illness symptoms also became a subject of intensive study. Going well beyond the psychoanalytic concept of secondary gain (e.g., What are the positive benefits of being sick?), Harvard sociologist Talcott Parsons, one of the founding theorists of medical sociology, began an in-depth study of the "sick role." He pointed out that the symptoms of illness were one of the few totally legitimate ways in American culture through which an individual might licitly withdraw from contending with normal behavioral expectations. Parsons' (1964, pp. 274–275) four characteristics of the sick role have enduring qualities in terms of the social dynamics of illness in American culture:

> There are the following four more specific features of the *role* of the sick person: (1) This incapacity is interpreted as beyond his powers to overcome by the process of decision making alone; in this sense he cannot be "held responsible" for the incapacity. Some kind of "therapeutic" process, spontaneous or aided, is conceived to be necessary to recovery. (2) Incapacity defined as illness is interpreted as a legitimate basis for the exemption of the sick individual, to varying degrees, in varying ways and for varying periods according to the nature of the illness, from his normal role and task obligations. (3) To be ill is thus to be in a partially and conditionally *legitimated* state. The essential condition of its legitimization, however, is the recognition by the sick person that to be ill is inherently *undesirable*, that he therefore has an obligation to try to "get well" and to cooperate with others to this end. (4) . . . the sick person and those with responsibility for his welfare, above all, members of his family, have an obligation to seek competent help and to cooperate with competent agencies in their attempts to help him get well.

The 1950s and 1960s also saw a great expansion of epidemiological studies fusing psychiatry, medical sociology, and medical anthropology to look at cultural and subcultural issues in symptom presentation. Recalling the observations from World War I, in which British physicians saw two quite different patterns of symptom expression in enlisted men and officers, we might wonder why such investigations took so long to initiate in the United States. A small group from Yale carried out the seminal American epidemiological study. Their findings distantly paralleled those of British military physicians 40 years earlier. Dividing a New Haven population into five socioeconomic status (SES) levels, Hollingshead and Redlich (1958) made two primary epidemiological discoveries. First, individuals in upper SES groupings presented psychological symptoms in response to psychiatric and psychosocially based ailments, while those

in lower SES predominantly presented somatic symptoms. Second, given the same level of symptomatic disability, upper SES patients were directed to outpatient psychotherapy, while the others tended to be hospitalized.

Another thread that was conceived in the 1950s, but did not truly develop until the 1970s, was the prefiguring of a new kind of model of human physiology and neurophysiology at the Josiah Macy conferences in New York as well as at some of the Cold Spring Harbor symposia. At the Macy conferences, the fathers of information theory, Weiner, Shannon, and Weaver, proposed a model of human physiology and the brain, central nervous system, and endocrine systems as informational or cybernetic systems. They argued that emotional events were transformed by the brain and body into complex internal messages and feedback systems that altered the body's internal environment in ways that could eventually be characterized and understood.

Chapter Nine

VIETNAM

It is essential to understand the Vietnam conflict if we are to understand some of the factors involved in Gulf War outcomes of combat stress. However, it is important to note that this chapter cannot and does not attempt to review the voluminous literature on stress and posttraumatic stress disorder (PTSD) during or since the Vietnam era. Rather it provides an introduction to some beliefs and research on stress and PTSD with regard to Vietnam veterans. Vietnam produced an extremely low proportion of proximate combat stress casualties[1] and produced or is claimed to have produced massive numbers of postcombat casualties. Therefore, Vietnam breaks with the past normative pattern of combat and war zone stress casualty production. A claim of those espousing the singularity of the Vietnam War is that it was designed, by its horrifying nature, to produce masses of posttraumatic stress casualties; however, this claim was a postwar development. A commonly cited figure of close to one million PTSD casualties (out of the two million nine hundred thousand who served in Vietnam, of whom about 15 percent or about 435,000 were in combat roles) is startling and raises many questions regarding the question of causality. (The wide disparities in prevalence figures are seen in McFarlane and De Girolamo, 1996.) The historically established basic conditions for such casualty generation and such widespread symptom prevalence was not perceived during the combat phase of the war. The second event cited as singular was presumed soldier exposure to Agent Orange; however, the presumption of exposure has produced widespread symptoms that cannot be verified as having an epidemiologically unique cause and physical examination does not differentiate the "exposed group" from the "control group." Therefore, the Vietnam experience leads us to wonder how much we are dealing with the sequelae of postcombat belief, expectation, explanation, and attribution rather than the sequelae of combat itself. While it would be impossible to deal comprehensively with the vast array of probable psychological, psychosomatic, nonphysically traumatic, and somatic

[1]This is normally the best indicator of postcombat casualties with a significant psychological component.

consequences of the Vietnam conflict, an overview and some cautious analysis is in order. I have chosen examples from the literature of the Vietnam era and some more recent examples to support my assertions regarding stress and PTSD.

VIETNAM AS A PARADIGMATIC CASE

To do justice to the complexities of the consequences of service in Vietnam would require a massive historical and analytic effort. Neither adequate time nor resources are presently available for such an undertaking as part of this report. Yet, if we are to understand the consequences of the psychological stresses of combat and deployment and comprehend the degree to which such consequences appear to be dependent upon sociocultural contextual variables, the Vietnam conflict may well be the paradigmatic case of this century. Vietnam illuminates the power of cultural constructs, military organizational behavior, and values and beliefs in the generation of a range of casualties. It also initiates the currently widespread belief that certain wars provide unique causal factors for their various psychological, psychosocial, psychosomatic, and somatic consequences.

The complex differences between casualty "sets" generated during the war and after the war would appear to underline the profound interactions between stress, belief, and a wide range of symptoms in shaping both the expressions of illness (i.e., that narrative composed of words, symptoms, and other behaviors that the individual presents to others) and the perceptions of causality. These interactions force us to question the taxonomic parameters involved in the nosological assumptions of military psychiatry as well as temporal and causative assumptions about the generation of combat and postcombat psychological and psychophysiological casualties. They also give us additional insight into the dynamics of popular beliefs and assumptions about the assignment of cause and the dynamics of blame.

The Vietnam conflict also, I believe, provided a powerful dimension that had been absent in past conflicts—a conceptual and political undermining of the operations of military medicine, including its ethical behavior, approaches, therapeutic techniques, and overall legitimacy. It would not be untoward to consider that the Vietnam conflict played a major role in persuading patients to believe in a conspiratorial antipatient view of much of institutional medicine (equivalent to the role it played in the widening evolution and development of such views of government in general). It is out of the cauldron of Vietnam that the views were popularized of government and "establishment institutions" as the "enemy of the people" and, putatively, their conscienceless users and abusers were popularized. These views moved, with the propelling aid of both

the extreme right and extreme left, from the supposed "lunatic fringes" of society to a position of quasi-legitimacy.

From a technical point of view, in terms of the consequences of deployment and combat, Vietnam was different in a number of ways from the other wars that the United States had engaged in during this century. While one can point out structural similarities to aspects of the Philippine Insurrection or the Korean War, it certainly differed from both. It fell into markedly different phases, each enmeshed in differing perceptions of the war, its nature, its legitimacy, and the manner in which it was fought. It intersected a national and worldwide drug epidemic (at least among the Western industrialized nations) and produced markedly differing arrays of psychological casualties through time. Its "major" cohort of psychological and psychophysiological casualties appeared to arise at home, among those who served in the period of lowest combat intensity. This coincided with a national outcry about U.S. participation in the war, accompanied by guilt, frustration, or betrayal, depending upon the political position of the perceiver.

In addition to the confounding factor of the drug epidemic of the late 1960s and early 1970s, Vietnam's latter phase and postwar period were characterized (as had been in no other conflict) by the widespread stigmatization of those who had served, combined with equally widespread attempts[2] to delegitimate a number of the major precipitating events and rationales for American participation. There appear to have been two gross dividing lines in terms of patterns of casualty generation during the conflict. The first is the Tet offensive of 1968, and the second is the drug abuse epidemic and shift to the policy of "Vietnamization." The Tet battle, perhaps more than any other set of events, served to propel a national sense of futility and delegitimate participation in the conflict. It is important to note that this major shift in perspective took place not in response to a military defeat but to what many analysts considered the most overwhelming tactical victory won by American arms in the course of the conflict. The population of South Vietnam did not rise in support of the North Vietnamese offensive despite the enemy's hopes and our fears. Although the military capacity of the enemy was destroyed for months to come, the media presented the offensive as a defeat for the U.S. and South Vietnamese forces (see Braestrup, 1977). Karnow (1991) makes the point that Tet, rather than transforming public opinion, simply hardened an already polarized public between the majority who wanted a tougher all-out war and a minority who wanted an immediate withdrawal. It is, of course, easy to see that such a pattern of beliefs, contrasting as they were, would nevertheless jointly reinforce percep-

[2]This is often supported by data, as in the *Pentagon Papers*.

tions of the illegitimacy of governmental operations and deepen suspicions of its motives.

PSYCHIATRIC CASUALTIES IN VIETNAM

It is important to point out, in this context, two issues: first, senior medical and psychiatric personnel were operating with diagnostic and clinical criteria developed from the experience of World War II and Korea. Second, *ex post facto* analyses of the operations of military psychiatry in Vietnam seldom underline the critical "cultural point," i.e., that the perceptions of the "line" practitioners created the "facts" for the participants and others at the time. In the initial years of the Vietnam conflict, the number of psychiatric and psychological casualties was small. However, junior medical psychiatric personnel were often both militarily and psychiatrically unsophisticated.[3] As Huffman (1970, p. 344) pointed out, "the man least trained and most junior in rank became [for some months] the sole representative of Army psychiatry in the only combat zone of the United States Army." Throughout most of the war, the only senior, fully experienced military psychiatrist in Vietnam was the theater consultant. In addition, the expectational set that existed was that the majority of casualties would parallel those of previous wars and consist primarily of "classical" combat or battle fatigue cases. Of the 610 patients whom Huffman saw between May 1965 and April 1966, only 48 appeared to have had combat stress as a component of the reason for their referral. The overwhelming majority of casualties were support troops without combat experience. One hundred thirteen had "severe problems related to alcohol intoxication"; and many had been reduced in rank because of adaptational or behavioral difficulties.

Larry E. Morris, an Air Force psychiatrist at Cam Ranh Bay in 1965–1966, studied noncombatant psychiatric casualties as the product of "a time-limited stress situation." He noted (1970, p. 353) that even without combat, "insurmountable hardships existed in the environment. Constant heat, humidity, noise, filth, vermin and crowding . . . [and] . . . the more subtle stresses of delay, shortage, uncertainty and ambiguity" as well as "the prison farm atmosphere of the bases in Vietnam." Morris saw a biphasic reaction pattern characterizing his patient population of 225. The first group[4] was characterized by "debilitating anxiety" and a wide array of physical disturbances and symptoms. Morris characterized

[3]As one new Army psychiatrist noted, "Having just completed an on-the-job training course of fourteen weeks in psychiatry before assignment to Vietnam, I was unsophisticated about psychiatric observations and practices in this or previous combat situations" (Huffman, 1970, p. 343).

[4]Twenty-nine percent of the total became patients during their initial two weeks in Vietnam. It must be remembered that these were the patients whose symptoms were serious enough to warrant evacuation to a hospital.

these patients as essentially immature and dependent; however, almost all of them were, with treatment, able to complete their tours.

The "second phase" adjustment-reaction patients (39 percent of the total) were predominantly depressed, exhibiting, "fatigability, sleep disturbance, maudlin episodes, irritability, rage reactions and drunkenness" (Morris, 1970, p. 357). Almost all of these men were diagnostically categorized as situational reactive depressions, "characterological" in base (see Morris, 1970). Almost all of them finished their tours in Vietnam, improving markedly after the six-month point of their twelve-month tours. It is important to point out that these were not men reacting to the traumatic stresses of combat. Rather, their exposure was to the myriad erosive stresses of the deployment. Throughout this period, the great majority of psychiatric "cases" were deemed to be "character and behavior disorders," with a situational illness episode "probably" precipitated by the situational stresses of combat and/or deployment.

In an editorial in the *American Journal of Psychiatry* in September 1967 about the psychiatric caseload on the hospital ship UNS *Repose,* the writer (R.J.B.) commented (p. 378),

> There would be a plethora of character and behavior disorders (67 percent) that will come as no surprise to those familiar with military medicine, for this percentage is roughly comparable to that of shore based hospitals.

Treatment tended to be aggressive, relying heavily on use of medications such as the phenothiazines and the anxiolytics and was reported as highly successful. Perhaps conditioned by the extremely high levels of combat psychiatric casualties generated during World War II and in the first year of the Korean War, the intellectual, practical, and emotional focus of military mental health was on the prevention, treatment, and level of generation of cases of what had come to be called "classical combat fatigue." Most agreed that only a few situations in Vietnam possessed the characteristics that generated high incidences of combat fatigue cases in past wars: the static "slugging match" with prolonged commitment to combat and prolonged exposure to weapons of indirect fire. Vietnam combat casualties had primarily short-duration exposure to firefights in hour-long or day-long "meeting engagements," combined with periods of rest and recuperation between such engagements and the sure knowledge of rotation home. Thus, those in military health care perceived that these soldiers were protected against the worst causal factors. This more "handleable" pattern was combined with a highly competent and aggressive forward, preventive psychiatric program. The note sounded by skilled and experienced commentators, looking at overall figures, was one of satisfaction and, to a degree, congratulation at the apparent solution offered to the threatening and destructive problem of combat fatigue and its human costs. An editorial signed by Colonel

William Tiffany (1967, p. 1585), then Army consultant in psychiatry, was typical. Tiffany began by noting that:

> The incidence of neuropsychiatric illness in U.S. Army troops in Vietnam is lower than any recorded in previous conflicts. The rate in Vietnam in calendar years 1965 and 1966 of individuals hospitalized or excused from duty for neuropsychiatric reasons was 12 per thousand troops per year. The rate during the Korean War was 73 per thousand troops per year. And in World War II, in combat areas the rate was as high as 101 in the First U.S. Army in Europe.

In addition to the rotation policy and sporadic combat, Tiffany noted that morale and training were probably better than those in World War II or Korea, as were the functioning of psychiatric teams.

While those engaged in forward treatment echoed the appraisals of Tiffany and others as to the very low level of combat fatigue casualties, they saw and reported a somewhat more complex scenario. Morris drew a picture of the noncombatant psychiatric casualty whose characterological vulnerabilities led to depression and psychophysiological symptoms. Several other psychiatrists pointed to a more complex differentiation of classes of combat stress casualties. "Classical" combat fatigue was indeed low in its incidence. But they maintained that it was complimented by another kind of combat stress reaction, called "pseudo–combat fatigue" by Strange (1968). Strange noted that classical combat fatigue included essentially "healthy" precombat personalities, pseudo–combat fatigue included patients that were premorbidly "neurotic" and far more difficult to treat. While both classes demonstrated the same array of depressive and psychophysiological symptoms, the pseudo–combat fatigue patients showed personality disorders, a history of poor adjustment, and poor stress tolerance and were poorly bonded to their units. Also, they responded more poorly to treatment than "classical" patients; a significantly lower percentage of those suffering pseudo–combat fatigue (50 percent) were returned to duty than the former (78 percent) (Strange, 1968). According to Strange, just 15 percent of the psychiatric patients[5] suffered classical combat fatigue.[6]

VIETNAM COMBAT REACTION

Strange's observations were complimented by variations reported by Pettera, Johnson, and Zimmer (1969) from the 9th division. They note (p. 673) the low level of classical combat fatigue in their division, describing it in Glass's terms

[5]These were the patients hospitalized on the *Repose* (roughly the same proportion of Marine psychological casualties treated in forward areas during "periods of heavy engagement").

[6]These cases had typically been in the war zone for more than six months, were deeply bonded to their units, and had excellent records.

as a "psychological disturbance" and going on to state that the most common symptoms were "uncontrollable crying, hyperventilation, extreme tremulousness, acute incapacitating anxiety," etc. Their description is an extremely limited one given the protean and polymorphic structure and distribution of symptoms that had contributed to the diagnosis of combat fatigue in previous wars. They found those individuals who fell into their category of combat fatigue to be readily treatable. The other major category that the authors described was "Vietnam combat reaction," which they defined as a psychophysiologic reaction to combat, a full-fledged syndrome, and, in the diagnostic language of the era, a "neurosis," with probable long-term consequences. This reaction, they noted, was seen in men approaching the end of their combat tours[7] (Pettera, Johnson, and Zimmer, 1969).

The observations of Pettera, Johnson, and Zimmer are of striking importance since they came extremely close to the first comprehensive description in Vietnam of what was later defined as PTSD.[8] For this reason it is worth quoting extensively from a section of their article (p. 674).

> The syndrome we call Vietnam combat reaction should be classified as a neurosis by virtue of being precipitated by repeated severe psychic trauma and developing over a relative prolonged period of time. . . . Another distinctive trait of this syndrome is the nearly identical case histories of its development from men of widely separated units whose only common denominator is participating in combat in Vietnam.

The symptoms presented in this syndrome are extensive, and some of them are fairly dramatic:

> The first symptoms of Vietnam combat reaction are either insomnia, anorexia or both, later progressing to a full blown syndrome which typically . . . includes: insomnia; recurrent terrifying nightmares, which are usually a reliving of a severe psychic trauma (friends and fellow combatants severely injured, mutilated, or killed, the subject himself wounded close to a vital organ, or perhaps his unit overrun by enemy with few survivors); anorexia progressing to nausea; vomiting (precipitated by enemy contact or explosions) and sometimes even watery diarrhea; depression, including guilt over not having saved his buddy's life or perhaps not having grieved enough for him, as well as shame for having broken down when others in his unit maintained emotional control; and, most prominent, severe anxiety with tremulousness, to such a degree as to make the soldier ineffective in combat. . . . Subjectively the soldier experiences a deep fear of combat or the thought of it, and notices increasing tremulousness beyond his control when in the field, especially if actual enemy contact is made (Pettera, Johnson, and Zimmer, 1969, p. 675).

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[7]That is, those with an average of ten months of in-country service.

[8]Or at least they came close to the symptom constellation from which the disorder is drawn in today's diagnostic classifications.

THE ECOLOGY OF COMBAT AND THE SOCIOCULTURAL CONTEXT OF THE VIETNAM CONFLICT

Pettera, Johnson, and Zimmer do not discuss the possibility of predisposing factors in those showing this syndrome. The argument may be made that almost all of the symptoms observed in Vietnam combat reaction are also symptoms of combat fatigue in World War II. One is struck however by the assertion of the common sharing of all the symptoms, their appearance toward the end of the 12-month compulsory Vietnam tour, and the roles played by repeated exposure to trauma and repetitive nightmare. These commonalities may reflect in some measure the sociocultural contribution to the initiation and generation of psychological and psychophysiological disorders. In World War II, military personnel served for the duration of the conflict. Commitment to combat was open ended; only death, severe wounding, or a complete breakdown provided escape from the battlefield. Casualty rates were often very high, and soldiers became both inured to traumatic events and fatalistic about their own survival. With some salient and terrible exceptions, casualty rates were comparatively low in Vietnam. The acceptance of death as the predictable and "normal" outcome of combat should not have had the controlling power over Vietnam soldiers' perceptions regarding survival that it did in the open-ended time commitment of World War II. Pettera, Johnson, and Zimmer, I believe, correctly reject a simple identification of this syndrome with "short-timers" syndrome, seen in Korea after the imposition of the time-limited tour. But we must wonder about the possible contribution that firm knowledge about the precise end of a tour of duty may have on exacerbating the responses to stress (see below).

Rotation was adopted in part in response to the work of Beebe, Appel, and others following World War II, which demonstrated a significant relationship between length of time in combat and the risk of psychological breakdown (Appel and Beebe, 1946). These observations from Vietnam may lead us to consider whether a close-ended and time-limited commitment may ultimately exact an equally high or perhaps greater long-term price by stripping the soldier of the psychological armor of fatalism and acceptance of death. It might also lead us to wonder whether brief, intermittent, or short-term exposures to extreme traumatic situations followed by rapid movement back to normalcy, may have the capacity to create worse long-term psychological and psychophysiological consequences than prolonged exposure combined with some of the adaptational mechanisms commented upon from the Civil War onward.

There were, certainly, from the latter part of the "advisory period" on, both Kafkaesque as well as Alice-in-Wonderland aspects of the war intermixed with the real trauma. The world of the American military in Vietnam was, for many, a world of ambiguities and ambivalence. With the exception of a few major population centers, most of the country was off-limits to American personnel, either

because it was held by the enemy (as in the 1964–1965 period) or as a matter of policy and security concerns (later in the conflict). Some U.S. troops expressed extreme ambivalence about the Vietnamese government and military—as a phenomenon of the later years of the war following the announcement of "Vietnamization." The same perceptions were expressed forcefully in the Walter Reed Army Institute of Research study during the advisory period in 1964.[9] With the exception of a few elite forces, Americans had little esteem for most Vietnamese Army units, which were often viewed as poorly trained, unmotivated, and in some cases cowardly. Thus, the national police were persistently referred to as "white mice," only in part because of their white uniforms. While some commentators have viewed these perceptions as "racism," they were complemented by an extraordinary appreciation of the motivation and combat qualities of the Viet Cong (VC). A majority of advisers at province, district, and unit levels expressed the belief that if they were in charge of a company or battalion of VC, they could "clean things up in a month."

At the same time, many advisers expressed admiration and respect for their Vietnamese counterparts, and almost all felt that their task would be worthwhile if they could assure "democratic freedom of choice" for the South Vietnamese. The national instability, as government after government was overturned during this initial period, cast doubt on the enterprise but also was a source of hope. There was a widespread feeling among the advisers that the government of South Vietnam was actively carrying out policies that would further alienate the peasantry and drive them into the arms of the National Liberation Front, and a feeling that the American Country Team refused to intervene to alter policies that were losing the "political war." Many of the advisers felt far more stress from their interactions with the American chain of command than in their transcultural relationships with Vietnamese. A number complained bitterly that there was not any way to tell "Saigon" (Military Assistance Command, Vietnam headquarters, and the embassy) anything that they did not wish to hear. The use of "numbers" as guides to interpretation of mission success or failure presaged the later utilization of "body counts" as indices, leading to bitterness on the part of some province advisers.[10]

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[9]I was a United States coinvestigator of study of Vietnamese adviser/counterpart relationships in 1964.

[10]Several advisors pointed this out to me after the first computer center arrived in Saigon in 1964, following which provincial political assessment shifted from qualitative to quantitative assessment. The following quote is from one such advisor (all research subjects were promised complete confidentiality):

> There is no way to point out that the number of bicycles which they [Saigon and Washington] see as markers of middle class (and therefore presumed anti-Communist) status is as large as it is in my province because they make up the V.C. transport and logistics net.

Even during the early period, ambivalence about and widespread distrust of the Vietnamese population was common. How did a soldier distinguish friend from foe?[11] There also was a disparity between the ultimate goals—stopping communism, creating a peaceful and democratic South Vietnam, and winning the "hearts and minds" of the peasantry—and the political and military means utilized to achieve those ends. There may be truth to the notion that the legitimacy of the ends (i.e., the reasons for engaging in combat) provides part of the context determining the outcome of acts and experiences. In that case, it is probable that a number of the means that delegitimated the ends being fought for were already latent in the context of service in Vietnam in 1964.

The advisers lived in a world of shifting and interpenetrating relationships. They lived between an unsafe domain of, on the one hand, combat, trauma, life threat, and the difficulties and stringencies of life in a third-world nation and, on the other hand, a world of comparative safety and, in some cases, even indulgence. Those stationed in Saigon could watch governments being overthrown from the comparative comforts of hotels or apartment buildings.[12] While this constant apposition of domains was not true for all, it presaged as well as symbolized the world of perpetual and rapid transition, combining with social isolation from the Vietnamese. This isolation and rapid switching of domains continued to characterize how many in the American forces lived after the escalation in 1965.

THE PHASES OF THE VIETNAM CONFLICT

One of the critical problems in considering the psychological and psychophysiological effects of the experiences of deployment and combat is the structure of the different wars being fought over time in Vietnam. Davidson (1991), among others, divides the war into three wide phases: phase one, extending through mid-1965, is seen as essentially an insurgency/counterinsurgency war, qualified by some conventional battles; phase two, extending from mid-1965 until Tet in 1968, a combination of insurgency and conventional war; phase three, following the almost total destruction of the VC and their political infrastructure during Tet, is characterized as a predominantly conventional guerrilla war—i.e.,

[11]The beliefs or myths were well established that small children were prepared to throw grenades at Americans or that a pretty girl smiling at a soldier driving through her village might well toss a grenade at him or fire at him with a weapon concealed under her *au dai* (traditional Vietnamese female dress).

[12]In Saigon hotels such as the Rex, field-grade officers were billeted, enjoying their regular "steak nights" and popular music combos with attractive singers. Sipping cocktails, these men watched a horizon illuminated with streams of tracers as gunships plied their trade while the combos' bass was reinforced by the thud of artillery. Officers assigned to the Military Assistance Command-Vietnam (MACV) could be seen daily impeccably dressed in white shorts and shirts, lunching and playing tennis at the Circle Sportif.

guerrilla-type operations carried out by North Vietnamese regulars (Davidson, 1991). It should be remembered, however, that temporally, with the exceptions of a few major battles (Tet, Khe Sanh, etc.), Vietnam had more in common with 19th century than with 20th century warfare. Lasting for two days, the first major force-on-force battle in which American troops were engaged pitted units of the 1st Cavalry Division (Airmobile) against North Vietnamese Army (NVA) regulars in the Ia Drang valley. These were comparatively short, bloody engagements, in which the losing force broke off contact and quit the field (Moore and Galloway, 1992).

Vietnam was a war without fronts, in which comparatively safe havens existed for both antagonists, in which both sides had committed to a war of attrition of the other's will and human resources,[13] and in which combat was defined by essentially time-limited engagement. The pattern of rapid movement from a relatively safe domain to an unsafe one may have been unavoidable.[14] The quasi-isolation from the population being defended was also, in all probability, a function of the "ecology" of the war. The world of the Vietnamese was continuously one of potential hostility and threat. The possibility of death and maiming from mines and booby traps was everywhere. The bar-girl or beckoning prostitute might well be a VC agent; safety lay in the cantonment.

THE PROBLEMS IN RESPECT TO PSYCHOLOGICALLY BASED CASUALTY GENERATION

At present, it is puzzling that these contextual factors did not appear to lead to higher levels of combat stress casualties during the first phase of the war, overlapping into the second phase (the period 1965–1968). These phases were punctuated with brutal, albeit brief, combat episodes. A good exemplar was the first truly major combat engaged in by American forces—the battles in the Ia Drang valley cited above. In three days of the battle at landing zone X Ray, the 1st Battalion 7th Cavalry had 79 killed and 121 wounded. When asked by the press for the name of the place of this battle, one lieutenant replied "The little Big Horn" (Moore and Galloway, 1992). C Company alone had 42 killed and 20 wounded. In the next of the battles in Ia Drang (Albany), units of the 2nd Battalion 7th Cavalry and 1st Battalion 5th Cavalry suffered 151 killed, 121 wounded, and 4 missing. The minimal military rule of thumb in World War II was that one psychiatric casualty would be generated in a reasonably proximate period for

[13]To the extent on the American side that body count, rather than territorial control, became the measure of military success.

[14]The war's 20th century parallel may have been the experience of heavy bomber crews stationed in England during World War II; however that included no quasi-isolation from the populace being defended.

each man killed.[15] However, nothing presently available in the literature indicates a significant number of combat stress casualties arising out of these battles in Vietnam.

A study of psychiatric referrals arising from the 78-day siege of the Marines at Khe Sanh demonstrated no rise over the level of such casualties in the same period in the previous year (see Edmendson and Platner, 1968). During the siege of Khe Sanh, which lasted from January 21 to April 6, 1968, 300 were killed, 2,500 were treated for wounds, and 2,250 were air evacuated. But there were only 67 psychiatric referrals, and 60 percent of these were returned to duty. The referrals were not the only psychological casualties, and as Edmendson and Platner (1968, p. 30) point out,

> After interviewing medical officers who did duty at Khe Sanh during the siege, the authors concluded that excellent treatment of most acute cases was done by battalion surgeons and corpsmen on the spot, usually sedation and tranquilization in a relatively safe place.

The Khe Sanh experience, like that of Dak To in 1967, was counterintuitive in terms of the numbers of psychological casualties generated. The number of combat-stress casualties remained consistently low. Thus, of the 823 psychiatric casualties evaluated at the medical battalion of the Third Marine Division, between February 1, 1967, and October 31, 1967 (90 percent of all those incurred by the division), only 11.8 percent were diagnosed as combat reactions, and an additional 5 percent as situational maladjustments. Personality disorders accounted for 30 percent of the total, and neurotic disorders for 32 percent. Both of these latter diagnostic categories, particularly for Marine personnel, were far more likely to be evacuated than the few diagnosed as combat reactions (see Kilpatrick and Grater, 1971).

In later years, these low levels were to lead to assault upon the professional premises and assumptions, as well as the ethics, of military psychiatry and the charge that psychically deeply wounded and highly symptomatic men were simply returned to duty in service of the needs of the institution, regardless of how profoundly they may have been damaged (see, for example, Barr and Zunin, 1971; Friedman, 1971). In reviewing at least a part of the literature of the period, it is difficult to discern either a pattern of coercion or a refusal to treat or evacuate a significant proportion of those who were referred to divisional or other psychiatric facilities. One measure of this may be to ask whether or not psychologically injured men who might have been kept in the line during a pe-

[15]A review that I was involved in with the Israeli Defense Forces of combat stress casualties during the Lebanese incursion in 1982, demonstrated that somewhat lower casualty rates than those reported for Ia Drang inflicted on units of similar size led to the generation of substantial numbers of stress casualties.

riod of crisis, such as the siege at Khe Sanh, appeared in greater numbers after the siege was lifted. This is not an unreasonable proposition based upon the World War II experience when, according to Glass (1973) psychiatric referrals almost always peaked some days after the battle had been resolved. Here Edmendson and Platner (1968, p. 30), referring back to those treated locally, note that,

> Most of these cases recovered without serious sequelae, it would appear as the incidence of referrals following the siege did Not [authors' underlining] increase; in fact a smaller number were seen.

THE TEMPORAL PATTERNS OF COMBAT-STRESS CASUALTIES

The central psychiatric conundrum of the Vietnam experience thus lies in the fact that combat-stress casualties were at their lowest for the years of the highest-intensity combat.[16] The great increases in psychiatric and stress problems took place during the period 1969–1971, when American involvement in combat became consistently lighter. After a temporal delay, the greatest increase then took place among veterans, particularly those who served in this later period. Following discharge and return to civilian life, the number of PTSD diagnoses rose.

The rule of thumb for the relationship between combat intensity (as defined by the rate of killed in action (KIA) per thousand) and psychiatric (psych) casualties, (in this case indicated by admissions to treatment facilities) was well illustrated by the annualized statistics for the Korean War. See Table 9.1.

This normative paradigm should be compared with the situation in Vietnam. The data for physical casualties is shown in Table 9.2.

Table 9.1

Killed in Action/Psychiatric Casualty Rates: Korean War

	Rate per 1,000 KIA	Rate per 1,000 Psych
Jul.–Dec. 1950	136	99.4
Jan.–Dec. 1951	36	59.0
Jan.–Dec. 1952	11	21.37
Jan.–Jul. 1953	12	13.57

NOTE: Based on data drawn from Reister, undated.

[16]Other psychiatric diagnoses also appeared to remain at about the same level as among garrison troops.

Table 9.2

Deaths from Hostile Action in Southeast Asia

	1965	1966	1967	1968	1969	1970	1971
Annual	1,369	5,008	9,314	14,537	9,361	4,225	1,160
Monthly average	114	417	782	1,216	785	352	163

NOTE: Based on data from Thayer, 1978.

All of the available data point to an exceptional increase in the rate of psychiatric and psychological admissions and referrals from 1970 onward. The only data that I have been able to find thus far that annualize psychiatric admissions are in a study reported by Palinkas and Coben (1988) that overviews psychiatric casualties among Marines in Vietnam. The authors pointed out that the overall psychiatric hospitalization rate for the Marines was equivalent to the rate for the Korean conflict of 35.3 per thousand per annum. As shown in Table 9.3, the greatest number of psychiatric diagnoses were generated during the period 1965–1969, peaking in 1968. However, the ratio of psychiatric casualties to wounded represents an inverse curve, with the ratio increasing as the number of wounded dramatically decreases.

It is important to point out that overall, only 3.5 percent of those diagnosed as psychiatric casualties were diagnosed with combat exhaustion. Personality disorders represented the largest single cluster, followed by anxiety neuroses, and acute situational maladjustment. Unfortunately the other diagnoses are not broken down on an annualized basis; thus the modest proportions attributable to drug abuse (2.7 percent) and alcoholism (3.4 percent) provide us with no clues as to patterning over time.

Table 9.3

Ratio of Hospitalized Psychiatric Casualties to Wounded in Action, U. S. Marines 1965–1971

	Casualties		
Year	Psychiatric	Wounded in action	Ratio psych./WIA
1965	180	806	22:100
1966	1,062	7,883	13:100
1967	1,928	20,501	9:100
1968	2,334	26,287	9:100
1969	2,255	17,410	13:100
1970	876	5,369	16:100
1971	193	485	40:100

NOTE: Based on data from Palinkas and Coben, 1988.

Spector (1993, p. 63), quoting Neel (1973), summarized the psychological casualties of Vietnam this way:

> "After 1968 the neuropsychiatric disease rate for Vietnam began to rise and increased more precipitously than in any other location where there were large numbers of American troops. By 1970 there were more than twice as many hospital admissions for psychosis, psychoneurosis, and character and behavior disorders as there had been in 1967. In terms of man-days lost, neuropsychiatric problems had become the second leading disease problem in the theater."

The issue involved is one of no small importance, if, as asserted in the dictum subscribed to by Glass and Weinstein, each war produces its own varieties of psychological casualties and psychological components of other illnesses.[17] Vietnam appears to have produced a poor connectivity between combat and the generation of psychological consequences. We are therefore faced with the question of what factors might have been responsible.

FACTORS SOME PRESUMED TO ACCOUNT FOR RATE VARIATIONS

Prescribed Medications

Any number of contributing causes have been adduced over time to account for the radical variations in rates as well as longer-term outcomes of psychological casualties. A number of commentators often pointed to the widespread use of neuroleptic and anxiolytic agents by physicians and psychiatrists in the theater for the treatment of combat fatigue, situational anxiety, and depression. In addition, commentators blamed the widespread use of Compazine, a neuroleptic used as an antinauseant in gastrointestinal (GI) diseases that has marked tranquilizing properties. Compazine was used for the treatment of the GI distresses and symptoms that in prior wars were seen as aspects of the immediate psychophysiological response to the stresses of combat and deployment. These treatments were usually short term and were widely reported as extremely successful. As Datel and Johnson (1981) reported following a survey of 116 Army psychiatrists and general medical officers who served in Vietnam in 1967, "prescribing physicians were of the opinion that psychotropic drug treatment was by and large quite influential in reducing the problems presented." When we look at later patterns of casualty increases, this treatment, however, does not appear to have been efficacious in either limiting or, from late 1969 onward, controlling the rapid rise in noncombat-stress-related psychiatric casualties classified as character, behavior, and like disorders.

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[17]Personal communication with Albert J. Glass, 1982; and personal communication with Edwin Weinstein, M.D., 1994.

Group and Unit Cohesion

Another factor that has been implicated was the rotation system itself. While any number of authors, particularly military psychiatrists during the first two phases of the war, have considered that the rotation system was one of the great moderators of stress and served to prevent breakdown (see, for example, Bourne, 1970), many other commentators have pointed to the problems of erosion of primary group and unit cohesion as well as to the continuous changes in leadership skill levels created by the even more rapid rotation of unit leaders—which led to periodic "unnecessary" increases in casualty levels (see Thayer, 1978).

In the initial deployments to Vietnam following the decision to "escalate" the war, most units were deployed as the kind of moderately stable organizations that characterized the U.S. Army and other services of the time. Most men had spent a reasonable amount of training time together and were as skilled as soldiers without combat experience could be. Because U.S. forces were managed and maintained on an individual—and not a unit-replacement basis—the weight of the psychologically protective bond created by organizational continuity was adventitious. As men were wounded, became ill, were transferred (to aid in unit cross-leveling), were killed, or returned home, their individual replacements came in at paces that undoubtedly had negative effects on maintaining unit skill and cohesion. This problem was exacerbated as time went on as more partially trained personnel were sent to Vietnam. As the war proceeded, particularly in the post-Tet period, many replacements entered the theater with little more than their 15 weeks of initial entry training as infantrymen. Some divisions insisted upon at least two weeks of training in jungle warfare for new arrivals. But some new arrivals found themselves on patrol or involved in "search and destroy" missions within days of arrival in the country.

Another factor contributing to the stresses experienced by those in combat organizations was the abbreviated command tour of battalion and company commanders, which often averaged less than six months. Bey (1972) documented the rise in stress for the organization as a general phenomenon. While Bey discussed leadership style and administrative behavior, Thayer pointed to what was probably an equally if not more significant source of stress: the difference in casualty rates incurred in sizable skirmishes when there was a change from long-term to new commanders. Those with less than six months in command averaged 2.46 killed in action per battalion commander month in command while those with more than six months in command averaged 1.62 per battalion commander month in command. This distinction was, Thayer believed, confirmed by a comparative analysis of casualty rates suffered in units of long-tour commanders during the first six months of the tour as opposed to subsequent months—thus establishing a learning curve thesis rather than a se-

lection difference. As Thayer points out, sizable skirmishes were perhaps the best measure of battalion commander effectiveness, since deaths due to snipers, mines, booby traps, etc. were independent of commander experience.[18] This is not the place to argue the propriety of the leader rotation policies; however, the experience of the Cohesion and Operational Readiness Training and most other programs designed to provide stable soldier and leader tours (see for example, Marlowe, 1984–1989) demonstrated that the Army's cultural focus on maintaining maximum individual equity and equal "ticket punch opportunity" are the central issues in assignment patterns, rather than impact on the unit. Thus, there was seldom the possibility of promotion of an experienced officer from within the unit to command. In most cases, the new commander arrived from some other location with no prior experience in Vietnam combat.

All of the literature of the Vietnam conflict and many of the postwar analyses have indicated that these patterns of leader rotation were significant sources of stress for the war's participants. Each change of command often led to wide apprehensions about being "wasted"—treated as a disposable—while it was perceived that a new commander was out to establish a reputation. At the company level, a soldier might be exposed to three or more changes of command during his one-year tour and at least two to three changes at the battalion level. Each of these changes often meant an extensive period of high stress for the soldier, involving greater perceived risk to life and limb as well as the imposition of new, and sometimes entirely incomprehensible, ways of carrying out the daily round of activities. This set of major stressors was (as Thayer's data demonstrate) equally present in the years of extremely low psychological casualties as well as in the years of high psychiatric referral.

Short-Timers Syndrome

One of the possibly more profound consequences of the 12-month tour was "short-timers syndrome" mentioned above. Short-timers syndrome, defined as a drop in morale, rise in anxiety, and a withdrawal from commitment to com-

[18]Company commander experience also resulted in fewer battle deaths, but the difference was in no way as dramatic as that for battalion commanders. It was dramatic in terms of company commander survivability in that the highest probability of the company commander himself being killed was in the first four months. However, over half of uninjured company commanders were relieved without cause prior to the end of their fourth month in command, and over 72 percent had been relieved prior to the end of five months (Thayer, 1978). There was an attempted rebuttal of Thayer's findings by the Office of the Deputy Chief of Staff for Operations, as well as by MACV headquarters, which Thayer, I believe, skillfully countered on the basis of the soundness of the data. The former also invoked the concept of a need for rapid rotation due to "commander burnout," a concept that even at the time should have been seen as having been made untenable by the effectiveness differentials defined in the data.

bat, among other patterns of behavior, was not new. It had been noted as an aspect of the limited tour in Korea. It had also been seen in World War I and World War II as a widespread group phenomenon as knowledge of the imminent end of combat spread through the ranks. Few men wished to be the last to be killed or wounded as the war approached its final days. In Korea and in Vietnam, appearing to have been even more intense, it had shifted from an appropriate response of the group to either final victory or defeat to a purely individual syndrome, as men counted down their days. In contrast to the already noted fatalism of a long war, it is difficult, at this point, to assess the longer-term psychological and psychophysiological consequences for men for whom the war wound down individually and differentially. Short-timer syndrome was noted as much as three months before the soldier's expected date of rotation back to the United States. We have no way of measuring what increases in stress and anxiety might have occurred during those final months—the crude but standard psychological instruments available then to assess stress and anxiety were not used. In many cases, soldiers lost so much combat effectiveness that they had to be moved to noncombatant positions as the end of their tour approached. Nor do we know if the experience of removal from battle created a form of "survivor guilt," which had been widely noted since World War II and deeply contributed to the psychiatric problems of men who survived when members of their primary group had been killed. The behavior exhibited could be dramatic and flagrant. As Dowling (1967) reported, as the time of return approached:

> There is the period of anxious apprehension, a potentially severe syndrome of emotional distress beginning mildly two to three months before rotation, but usually occurring obviously in the last three weeks of the tour and most marked the last three days prior to rotation. Irritability seems to alternate with euphoria. Pacing is a common sign. Quiet hard working individuals who for eleven and three quarters months have put up with deprivations, long working hours, and continually increased demands will suddenly behave in a rather inappropriate manner. A fire chief at the 1st Cav. who worked a 12 hour day—20 days on, one day off for 11 months 26 days—suddenly flew into a rage in his orderly room, disobeyed orders from his commanding officer, was eventually subdued and was brought to the psychiatric ward. After a somewhat lengthy period of ventilation the crux of the situation seemed to be that he was not yet manifested on a flight to leave for the states, but the same day a co-worker with whom he had arrived had departed for the states getting a four day drop in time.

Life Restructure As a Factor

The intensity of these responses may speak to an issue that has been little discussed in relation to the sources of behavior in a combat zone. This issue involves a restructuring of the values assigned to various interactions and events because of the circumscribed arena of life events. This restructuring leads to

social and physical environments having extraordinary determining power over the soldier. Restructuring also leads to a consequent increase in the symbolic value and threat-based stress response that events have, which under other circumstances might be classified as trivial. The closed microculture's power to develop stress, apprehension, anxiety, depression, and overreaction has not been well investigated. In a 1950s study of Army basic training, this amplificatory effect of the closed-system "hothouse" appeared salient to the author (Marlowe, 1963b). Unpredictability and 24-hour-a-day scrutiny by peers and leaders gave threatening and stressful significance to events and behaviors that might not even have been noticed in other environments. We must consider then, in a combat zone, what shifts would be made in the baseline levels of chronic stresses and the number of punctuate events in an environment always perceived as holding the imminent possibility of death or maiming and that could call forth chronic, high-level physiological responses from a large minority of the population.

SUBSTANCE ABUSE IN VIETNAM

The rise in psychiatric referrals has been attributed by some to the so-called Vietnam drug epidemic. This is another "presumed" causal factor that must be examined with great care. It is sometimes forgotten that, rather than representing a specific response of alienated service personnel to the conditions of Vietnam and "feelings" about the war, drug use in Vietnam coincided with both a U.S. and worldwide epidemic of polydrug usage. The initial focus upon drug abuse and use in Vietnam was on marijuana. As in most other nations of Southeast Asia and the United States, marijuana was widely grown and widely available in Vietnam.[19] By early 1967, psychiatric referrals for marijuana-induced toxic psychoses were being reported by military facilities in Vietnam. In a survey of prisoners in the Long Binh Stockade, the major U.S. military confinement facility in Vietnam, the majority of prisoners had used marijuana, and most of these had started using it in civil life (Baker, 1971). Another survey, reported in the same time frame, was of approximately 4 percent of the men leaving III and IV Corps areas in Southern Vietnam to return to the United States during the same period—28.9 percent of the respondents admitted to using marijuana in Vietnam, and 31.7 percent admitted using it at some time during their lifetimes (Roffman and Sapol, 1970). However, 61 percent of that total claimed to have smoked marijuana for the first time in Vietnam. Almost all of those who might be classified as heavy users had been such prior to coming to Vietnam.

[19]Note also that Cannabis, in addition to being the source of hashish and marijuana, is also the source of hemp, at one time the substance most widely used in the world for cordage and sacking.

There was nothing unique about these levels of drug use in Vietnam.[20] Levels of drug use and abuse were accelerating throughout American society, particularly in the age group that accounted for most of the junior personnel in the military. Within the Army, there appears to have been a rapidly rising curve of usage if criminal investigation records represent a reasonable indicator of prevalence and incidence. Baker (1971) reported that "in 1967, 4.7 percent of the cases received at the criminal investigation repository for filing were drug cases." The percentage rose to 27.4 in 1968 and to 37.4 in 1969 (Baker, 1971).

The baseline agents of abuse in Vietnam were marijuana and alcohol. Both were apparently equally abused by those who did not deploy to Vietnam as well as by those who were not in the military. In addition to these baseline substances, a wide pattern of polydrug use was evolving throughout the period, in Vietnam, in the United States, and in other overseas theaters. In one study, done in 1971 at Fort Riley in Kansas, there was little difference of reported current use of illicit drugs between Vietnam returnees and controls. That drug use in Vietnam appears to have been more the product of a "drug-accepting youth culture" moving into an area of high availability ("a drug cafeteria") rather than, as some claimed, a mechanism for coping with stress, anxiety, and trauma (see Fidaleo, 1968) is supported by the data in one of Robins, Helzer, and Davis' studies of returnees (1975). It is noted (p. 958) that:

> If a man was going to use narcotics at all in Vietnam, he usually began early in his tour. One-fifth of all users began within the first week of arrival and three-fifths within the first three months. Only one-fourth of those who had ever tried narcotics waited more than four months to begin. This early use might suggest that the particulars of the Vietnam experience with respect to danger, combat experience, and experiencing deaths of friends must not have been critical factors in trying narcotics, since first use generally preceded extensive exposure to these hardships. This assumption was supported by the fact that there was no correlation between drug use and assignments, danger, or death of friends.

Robins, Helzer, and Davis (1975, p. 958) go on to point out that "the most common reason given for use was the drug's euphoria-producing effect."

The high levels of polydrug, and particularly narcotics, use in Vietnam did not exist as a unique outlier. As Baker (1971) pointed out, in 1962, 1 percent of the psychiatric admissions to Walter Reed General Hospital in Washington, D.C., was substance abuse related, rising to 20 percent in 1968 and 25 percent in 1969. This rise in Vietnam-era drug-based psychiatric referrals in areas other than Vietnam would appear to make it difficult to hold the "drug epidemic" re-

[20]After all, 1967 was the year in which a series of national workshops were held on the drug problem on college campuses (see, for example, Nowlis, 1969).

sponsible for the wide disparity in rates of psychiatric referral and admission in Vietnam as opposed to other areas.

While 43 percent of Robins, Helzer, and Davis' sample had used narcotics in Vietnam, use for the majority was recreational and for almost all did not fit the American stereotypes that had been associated with such use. Heroin was primarily smoked and like most other drugs used commensally and socially. The model for usage of the OJ (opium joint–heroin loaded cigarette) was that of the social group use of marijuana at home. While an image of drug use by alienated draftees was common at home, drug use rates among the lower enlisted ranks was disproportionately high among regular Army enlistees who had volunteered for service. Once again heavy users in Vietnam tended strongly to be those who had been heavy users prior to entering the service. Despite the often described group opposition between "heads" and "juicers" (i.e., drug-using junior enlisted personnel as opposed to alcohol consuming "lifers"—career service members—see, for example, Ingraham, 1974), drug using groups were also characterized by alcohol consumption. This latter form of use represents the major carryover into post-Vietnam civil life and the highest "agent" correlate with those who produced the patterns of psychological and physical symptoms that have come to be perceived as aspects of PTSD.

The most telling finding about the Vietnam drug user and abuser was the rapidity with which narcotics use was terminated upon return. There was a rapid regression from the high levels of use in Vietnam to the levels of use that had been cited prior to the Vietnam deployment.[21] Those who were at higher risk, for both behavioral and particularly psychological problems, were the 10 percent of the Robins, Helzer, and Davis' sample who continued some level of narcotics use after return. While only 1 percent of the total reported the symptoms of dependence, Robins, Helzer, and Davis (1975, p. 959) point out that there were predisposing factors, noting that,

> The best predictors of heavy use among those who used narcotics at all after Vietnam were as follows: injecting drugs before Vietnam, having parents who had drinking problems or arrests, drug use in or before Vietnam, dependence on barbiturates, and being an enlistee rather than a draftee.

These factors thus make it difficult to attribute significant aspects of the extensive psychological, psychosocial, and psychophysiological problems of a subset of veterans to the consequences of the drug experience during or after Vietnam. According to Nace et al. (1977) and O'Brien et al. (1980) in a population subset

[21]The patterns of use appear to have rapidly devolved to the widespread ones of recreational drug use in society at large, particularly in terms of agents of choice with minimal continuation of regular narcotics use.

of drug users and nonusers studied in Philadelphia, the majority of those who had preservice histories of use were depressed and continued heavy alcohol use following return to the United States while high alcohol use was common to all groups.

TRAUMATIC EXPOSURE IN VIETNAM AND ITS ATTRIBUTIONAL ROLE IN THE DEVELOPMENT OF THE PTSD OUTCOME CATEGORY

A segment of the psychiatric community believes that an extraordinarily high level of multilayered traumata is the common experience of those who participated in the Vietnam conflict. This model, promulgated initially in its most comprehensive forms by Shatan and Lifton (see, Lifton, 1973; and Shatan, 1972 and 1973), represents a core set of evaluative and diagnostic principles out of which the construct of PTSD has evolved into its present wide currency. This model assumes that the experience of Vietnam was similar to the experience of the Holocaust, with the soldier bearing the multiple traumata of both victim and perpetrator. Both authors believed that military psychiatrists in Vietnam systematically ignored, or at any rate did not attend to, the deep and profound psychological injuries being borne by the participants in the conflict. To say that this image of Vietnam service is Dantesque is perhaps an understatement, and from my perspective, the establishing data may well be problematic in that it arose out of highly politicized sources.

Neither Shatan nor Lifton served in or experienced Vietnam. In 1971, Lifton, who was vocally against the war, participated in the "Winter Soldier" testimony organized by the Vietnam Veterans Against the War (VVAW).[22] These hearings, generated in part out of the response to widening knowledge of the events at My Lai, painted Vietnam as a catchment of continuous atrocities and "dehumanized" behavior. It should be noted that some have raised serious doubts about the creditability of the testimony and some of the "testifiers" at the Winter Soldier meeting. Lewy (1980), among others, has pointed out that there were grave problems with the Winter Soldier testimony, some were apparently not the people they had presented themselves as, and all refused to give military investigators the dates, sites, and names of perpetrators of atrocities that they had reported. The tragic reality, as Lewy pointed out, was that Herbert's book (Herbert, 1973) and testimony were established to be a series of falsehoods and half truths.

This issue is of some importance in terms of the factors that generated the spectrum of psychological and other disorders that appeared to originate in the

[22]The full transcripts of the "Winter Soldier" are available on the web (http://lists.village.virginia.edu/sixties/HTML_docs/Resources/Primary/Winter_Soldier/WS_entry.html).

Vietnam experience, because widespread participation in and exposure to atrocities were taken as a characteristic of the Vietnam experience, differentiating it from other wars. It may also be important epistemologically, in terms of the assertion about key causative factors that were assumed to underlie the widespread diagnostic attribution of PTSD to a vast number of Vietnam veterans. It is a highly debatable issue and one that remains contentious. Many historians and participants in the Vietnam conflict, drawing upon their experiences, stoutly deny that atrocities like the terrible slaughter perpetrated at My Lai were anything but aberrations. A modest measure of how aberrant such acts were may lie in the statement made by Daniel Ellsberg, a leading antiwar activist quoted by Spector (1993, p. 205):

> "My Lai was beyond the bounds of permissible behavior, and that is recognized by virtually every soldier in Vietnam. . . . They know it was wrong. . . . The men who were at My Lai know there were aspects out of the ordinary. That is why they tried to hide the event, talked about it to no one, discussed it very little even among themselves."

Spector then goes on to cite a conversation he had with the Americal Division (the division to which Medina's company and Calley's platoon belonged when Calley ordered the murders at My Lai): "How did the men react to My Lai when the story broke? . . . 'That's easy,' was the reply. 'Nobody wanted to be in the Americal Division'" (Spector, 1993, p. 206).

Some have claimed that widespread atrocities were hidden in a massive conspiracy and cover up. Lewy (1980) has pointed out that very few soldiers[23] were convicted by courts-martial of crimes against the Vietnamese—a low level compared with the level of convictions in previous conflicts. As Isaacs (1997) pointed out, the socially constructed reality in fiction, the media, motion pictures, and television presented atrocity commission and murder as the regular behavior of soldiers in Vietnam. He adds (p. 22),

> But the actual incidence of GIs murdering or accidentally killing civilians was certainly a small fraction of the murder rate reflected in novels and movies and television shows.

It appears to have been well established that the overwhelming majority of the civilian deaths in Vietnam were the result of the basic tactics and technologies utilized, but the rules of engagement allowed for proportionally fewer such casualties than in either World War II or the Korean War (see, Isaacs, 1997; Spector, 1993).

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[23]Between 1965 and 1973, just 201 soldiers were convicted of crimes against the Vietnamese. Between 1965 and 1971, 77 Marines were convicted of these crimes.

Initially, assertions about the level of atrocities appeared to be correlated to the political commitments of the commentators. This, in my view, unfortunately appears to have been so in the work of Lifton, particularly in terms of the perceptions and beliefs upon which he built the posttraumatic stress paradigm that has come to play such a massive role in defining the consequences of the Vietnam War for its participants. As part of his analysis of the psychological effects of Vietnam, Lifton defined the men who served in Vietnam as both "victims and executioners," the products of a training regimen, racism, and a counterinsurgency doctrine that combined with conditions in Vietnam to create an "atrocity-producing" situation and its subsequent consequences. The stage upon which their behavior was played out was one inhabited by people they had been shaped to treat solely as prey, the "dehumanized" "South Vietnamese–gooks." The invocation of massive racism as a source of dehumanization and guilt is an unproven assumption.[24] While racism may be a component, it was certainly neither a necessary nor even the most extensive one. As a general thesis, the criticality of racism is undercut by the admiration expressed for the enemy and also by the consistent patterns of intermarriage between American soldiers and Vietnamese women.

Above all, in Lifton's formulations, there is no image of American behavior as responsive to enemy behavior, tactics, or assaults. He wrote of a time inhabited by only the crucified (the Vietnamese) and the crucifiers (the Americans). Lifton ascribes authentic nobility and warriorship only to those on the side of the National Liberation Front (NLF) or North Vietnam—authentic humanity exists only in the recognition of this central iconic "fact," all else is "false witness." Lifton's vision of this process is, I think, epitomized in the following passages from *Home from the War,* which defined the political assumptions upon which at least a part of his diagnostic and attributional model was built. The reasons for the war were bound up in three psychohistorical illusions:

> The first of these illusions concerns the nature of the war and converts a fifty year old anticolonial revolution, nationalist and communist from its inception, into an outside invasion. The second concerns the nature of the government we have supported, and converts a despotic regime without standing among its own people into a "democratic ally." The third illusion, partly a product of fatigue over the first two holds that we can Vietnamize the war. . . . Bound up with this last illusion is a seemingly pragmatic Machiavellian effort . . . to create in Vietnam an urbanized "consumer society" under American and Japanese corporate hegemony (Lifton, 1973, p. 65).

[24]That there is and has been a significant amount of racism in American society is a truth beyond cavil. However, racism is not needed to facilitate violence. For example, in Thucydides' descriptions, barbarity, mass murders, pillage, and enslavement are carried out between city-states that shared the same biological substrate, religion, language, and culture. Distinguishing features are readily created out of the substance and events of war.

While there are partial truths embedded in Lifton's "psychohistorical illusions," they would not be recognized as fair accounts by most historians of either the war or Vietnamese nationalism. Another set of implicit assumptions underlying Lifton's etiological and diagnostic thought lies in his interpretation of the "gook" syndrome and the combination of racism and victimization that he saw as driving it. He concluded that, "by victimizing another group and establishing it as death tainted, one's own collective existence or symbolic immortality can seem to be confirmed." Furthermore, he states:

> Equally important to the outcome is the victim's (or potential victim's) rejection of that state, the refusal to be "gook" or "nigger." By casting aside his own earlier adaptation to victimization, by instead insisting upon living out collective forms of protest and transformation he initiates renewed historical connection and lays claim to modes of symbolic immortality that prevent him from being viewed or treated as a "death tainted victim." This is precisely what has happened among Vietnamese: by becoming national revolutionaries, whether through joining the North or the NLF, men and women ceased to qualify (in the eyes of first the French and then the Americans) as "death tainted gooks" or their equivalents. In contrast millions of Vietnamese more or less under the control of the American-sponsored regimes of the South have remained locked in the counterfeit Universe and thereby condemned to the fate of gook-victims. . . . In this fundamental psychohistorical way, the Vietnam war epitomizes a world wide struggle (mostly on the part of non-white peoples) against victimization (in the past by European imperialism and now by the Pax Americana replacing and in ways perpetuating that imperialism)—a struggle whose psychological as well as political success seems to depend upon a revolutionary mode of immortality (Lifton, 1973, p. 214).

The subtext of Lifton's work is that participation in Vietnam created an illness driven by racism, atrocity, and victimization. Therapy for the victim (the American veteran) consists, according to Lifton, in the rejection of this heritage and embracing or coming to the authentic world of "nonvictimhood."

From an epidemiological point of view, the universality of Lifton's findings is suspect. They are drawn from a small cadre of antiwar veterans' perceptions, statements, and psychological pain. In addition, these veterans were self-selected for treatment under the aegis of the antiwar group VVAW, which assigned all operational good to one side, North Vietnam, and all evil to the other. In the light of the history of both the war and the succeeding decades, this position proves difficult to maintain.

As van der Kolk, McFarlane, and Weisaeth (1996) point out, the work done by Lifton and Shatan in defining "Vietnam veterans' syndrome" represents one of

the tap roots in the development (or rediscovery) of the concept of PTSD.[25] In 1974 the *Diagnostic and Statistical Manuals of Mental Disorders* contained no diagnostic category for war neurosis or war-generated disorders, and the addition of such a category to the third edition (American Psychiatric Association, 1980) would certainly have been in Lifton and Shatan's opinion an appropriate response necessary to fill such a lacuna. However, certain basic problems remain, and the PTSD construct remains a difficult one. Young (1995) has criticized it as a convenient sociocultural construct—a new "created category" of illness. Van der Kolk and his coauthors (1996, p. 67), on the other hand, see changing sociocultural and political conditions as having led continually to the denial of the importance and psychiatric consequences of psychic trauma through a prolonged period:

> Psychiatry's amnesia about the importance of psychic trauma has taken the strange form of a "repetition compulsion." Because of periodic denials about the reality of trauma's effects on the human soma and psyche, hard earned knowledge has been repeatedly lost and subsequently discovered *de novo*.

In light of the changing assumptions underlying depth psychological thought in psychiatry over the years, one might consider where the major sources of such denials might have originated.

However, it is important to note that the very concept of psychic trauma, if it is not coupled with coeval physical assault or insult, is, as we have pointed out, subject to cultural definition. The initial characterization of PTSD as the result of experiencing an event that "falls outside the range of normal human experience,"[26] involves a set of value judgments about human experiences and the valences of events that vary widely from culture to culture and historical epoch to historical epoch. For most human societies until quite recently, chronic warfare, famine, brutality, persecution, and slavery were essential facts of human experience.

Thus, witnessing a public hanging or beheading would be traumatic for a large segment of the present American population, while in the 18th and 19th centuries it was conceived of as good entertainment in most Western societies. We may have widely expanded the spectrum of events responded to as sources of trauma well beyond that of preceding generations. This point is of some import given the extraordinary proportions of Vietnam veterans who have been categorized as suffering from PTSD and who have suffered a range of psychological and physical symptoms. The levels of atrocity, fire fights, and other traumatic

[25]"Vietnam veterans' syndrome" was ultimately subsumed in PTSD according to DSM III (see van der Kolk et al., "History of Trauma in Psychiatry" in van der Kolk, McFarlane, and Weisaeth, 1996).

[26]A definition that continued to be used in DSM III R (American Psychiatric Association, 1987).

situations in Vietnam claimed by Lifton (his VVAW groups and those who followed him) and the postwar media images of soldiers' experiences vary greatly from what appear to be more-objective and wider-scale assessments of the occurrence of such events in the Vietnam conflict. One response has been to broaden the concept of traumatic exposure to include secondary and tertiary forms of exposure. Thus, the *Diagnostic and Statistical Manual of Mental Disorders,* fourth edition (American Psychiatric Association, 1994), includes as extreme stressors both witnessed events and events experienced by others that have been learned about. Indeed, the diagnosis of PTSD (309.81) is a function of the stressor and the symptom pattern of the individual's response to that stressor.

There are the additional problems involved in focusing on trauma to the exclusion of other stressors in the production of both proximate and delayed psychological and physical symptoms. Myriad complexities are involved in the widespread use of the concept of PTSD and in the issue of its "reality" as a medical diagnosis or a cultural catch-all, generated in part out of political conceptions of the moral validity of the Vietnam conflict. PTSD itself, like combat or battle fatigue in World War II, was built upon a set of implicitly psychoanalytically derived models. These models came from the observations and theoretical assumptions of Kardiner, Grinker, and Spiegel; were further developed by Figley, Horowitz, van der Kolk and others; and have been seriously questioned by Young among others (see Kardiner, 1941; Grinker, and Spiegel, 1945; Horowitz, 1976; Figley, 1978; van der Kolk, 1984; and Young, 1995).

The PTSD figures, cited in various studies of its prevalence in Vietnam veterans, present us with a problem that bears upon both historical epidemiology and the nature of diagnostic allocation. The study most often cited is the National Vietnam Veterans Readjustment Study (Kulka et al., 1990). According to this survey of veterans' self-reported symptoms, 15.2 percent of male Vietnam theater veterans had PTSD features 20 years after the war and another 11.1 percent had partial PTSD; and there was a total prevalence during the 20-year period of 960,000 veterans who had suffered PTSD features. These figures are remarkable.[27] A contrast is provided by the Centers for Disease Control (CDC) Vietnam Experience Study, which included actual comprehensive examinations. Here the sample produces a figure of 15 percent as the prevalence of Vietnam veterans who had ever suffered from PTSD and 2 percent as a point prevalence for the preceding month (Centers for Disease Control, 1988a). DSM IV

[27]Note that they are not based on actual psychiatric diagnoses, but upon the presence of self-reported symptom sets, both psychological and physical, in response to various survey instruments. The fineness of the "diagnostic mesh" of these instruments may well be debatable.

(American Psychiatric Association, 1994, p. 426) points out about study data on prevalence of PTSD:

> Community based studies reveal a lifetime prevalence for Posttraumatic Stress Disorder ranging from 1% to 14% with the variability related to methods of ascertainment and the population sampled. Studies of at-risk individuals (e.g., combat veterans, victims of volcanic eruptions or criminal violence) have yielded prevalence rates ranging from 3% to 58%. Such wide parameters are seldom reported for other diagnostic categories.

There is another reason to be concerned about the sources of the wide array of psychological and somatic symptoms presented by individuals reporting themselves as suffering from PTSD, and this lies in the proportion of returnees who have exhibited symptoms of this syndrome. Approximately 2,900,000 Americans served in Vietnam over the entire period of the conflict, and a majority of these were support personnel not combat troops. Presumably one-third of the total force has suffered PTSD since the war. This might make sense if Vietnam had really been, for almost all personnel there, as traumatic as described in Lifton and Shatan's Winter Soldier testimony. Pointing out this discrepancy is not to say that a large number of Vietnam veterans did not experience very real stress-related features postcombat; rather it seems to point to an uncertainty or lack of a clear understanding of what were true antecedents to postcombat or posttraumatic stress. The large numbers challenge prior thinking and call for further investigation.

In the heavy and relentless combat of World War II, combat-stress casualties averaged one for every four wounded.[28] The levels of exposure to traumatic events in the environment were, for many World War II support personnel, perhaps as great if not greater than for those in Vietnam. It must be remembered that American tactical doctrine and reliance on firepower leveled towns, villages, and cities, causing high numbers of civilian as well as military casualties.[29] Unlike Vietnam with its search and destroy tactics, support personnel moved rapidly into population centers that still reeked of death and destruction. Van der Kolk and others may dismiss the modest numbers of "delayed" casualties or sufferers from traumatic neuroses from these past conflicts under the rubric of denial. However, it is important to note that neither the nations nor the medical communities involved denied the probability of a large cohort of men suffering postcombat psychiatric problems following either World War I or World War II. The official statistics for shell shock from the British Army in

[28]This rate fluctuated with the duration and intensity of combat, the amount of indirect fire experienced by the troops involved and was mediated by cohesion, morale, and the effectiveness of the members of the organization.

[29]Body parts, dead women and children, enemy dead, and our own dead were common sights. Still, this level of carnage did not reach that created by World War I and a number of other wars.

World War I are unreliable, but it was estimated that the total number of "shell-shocked wounded" between 1914 and 1917 was 28,533, with approximately another 51,000 "shell-shocked sick" (Babington, 1997). Babington further notes (1997, p. 121) that "fresh cases of war neurosis were occurring continuously during the post-war years." In all, he reports that 120,000 men had either been pensioned or received a cash payment for "primary psychiatric disability."[30] The deep national concern in Britain about the consequences of combat is underlined by Babington (1997, p. 122) when he points out that "in 1919 a new charity called 'Combat Stress' was founded in London." Its purpose was helping men and women of all ranks who had developed a psychiatric illness while serving in the armed forces or the merchant navy.[31] After World War I and World War II, while there were postcombat and postwar casualties there was no deluge of delayed psychiatric casualties. The anticipated diagnostic metaphor may not have been PTSD, but those of war neurosis, combat fatigue, etc. would have covered the same range of disabling symptoms. While the issue may thus be one of nominal allocation to a "named" diagnostic category and etiology, it is doubtful that masses of humans in pain, who would have had to number in the millions from World War I and World War II, would not have found an appropriate category of illness in which to present themselves.

SOME FURTHER CONSIDERATIONS ON THE ISSUE OF PTSD

It would be unfair at this point, to those suffering from PTSD and those engaged in research and treatment, to leave consideration of PTSD to the formulations that characterized the first decade of concern and much popular thought about this problem. Given the approximately 3,000 articles that have been published in the last 25 years on the topic of PTSD, this report is no venue for attempting a comprehensive history of the evolution of the diagnostic category and scientific thinking about it. It is also important to note that the field of PTSD research has evolved greatly since Lefton and Shatan. My criticism of their writings is included to demonstrate and exemplify the influence and important reliance on sociocultural and political thinking on the labeling of the causal factors of what came to be referred to as PTSD at that time. Also of note is that while current thinking may have been motivated by Lifton and Shatan, the field and contemporary thinking are not dependent upon it and include many skilled and learned researchers and clinicians.

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[30]Approximately 70,000 Americans had been disabled by psychiatric ailments during World War I, the actual proportion who continued to demonstrate significant symptoms does not seem to be available.

[31]The organization adopted Rudyard Kipling's evocative stanza: "They broke his body and his mind/And yet they made him live,/They asked more from My Mother's son/Than any man could give" (Babington, 1997, p. 123).

My concern in this report has been with the establishment of a category, label, and diagnosis that was applied to those who served in combat. I have deliberately focused on some of the clinical assumptions, sociopolitical assertions, and value perceptions that led to the establishment of a broad category of illness. It is important to note that I am not personally critical of the diagnostic entity and validity of PTSD. My criticism is based on my own experience and scientific inquiry. My stance in this report has not been clinical but scientific in the sense of attempting to consider the factors involved in the connection of the category and problems with some of the underlying assumptions and judgments. In Karl Popper's (1959 and 1972) terms, PTSD as a concept was in danger of ceasing to have scientific validity as it became "non-falsifiable" and less and less subject to testing. A number of concepts were the subjects of clinical inference with no or little empirical verification—e.g., repressed and unrecovered or hidden memories, Lifton's "death imprint," and the widespread belief that exposure to trauma alone was sufficient cause of PTSD. These types of inference added to the difficulties involved. A number of commentators tended to anachronistically view all psychological problems suffered by soldiers in combat as PTSD, extending even to Shay's view of Achilles in the *Iliad.*

For some, the extensive work done during World War II on the "normal battle reaction"—a variable set of psychosomatic, psychological, autonomic symptoms, combined with fear and fatigue—was self-limiting (see Ransom, 1949). The greatest concern of military psychiatry in World War II was for those whose reactions went beyond the normal and became fixed and disabling. In Hanson's introduction to this monograph (Hanson, 1949), he points out that tremulousness, insomnia, and recurrent nightmares are "normal" in combat and probably pathological not in combat. Unfortunately the diagnostic language and categories are markedly different from those of today. The category evoked is neurosis described in terms of a continuum of anxiety. The greatest concern was for those whose symptoms became fixed in a chronic state of anxiety. The precipitants were assumed to be fear, danger, and exposure to cataclysmic events. All of this is familiar enough, as are the physical and physiological symptoms involved. What future generations attended to less were the observations that patients who tended to develop fixed symptoms were a group strongly biased in terms of the existence of premilitary psychological problems. This was a finding substantiated by Brill and Beebe (1951) in a post–World War II follow-up study of psychoneuroses, in which preexisting factors were shown to affect outcome greatly. As pointed out previously, this issue of predisposition or vulnerability was seldom considered in the period from World War II to Vietnam. It is not surprising therefore that the initial post-Vietnam development of PTSD concepts should have focused almost exclusively on extrinsic factors—i.e., exposure to traumatic events, psychological sequelae, and psychosomatic consequences. The issue of exposure was the *sine qua non*

for determining the sequelae of PTSD. Conversely, for some, if PTSD symptoms existed, then, by definition, the individual had been exposed to trauma even if no such exposure existed in the record.

In a number of senses, work on PTSD demonstrates some of the great strengths of scientific inquiry and method contending with the possible flaws in initial formulations and approaches to a medical problem. The history of the development of conceptualization, experiment, and analytic rethinking is an extremely complex one. This chapter can be indicative only and not comprehensive. Of the nearly 3,000 separate journal articles that have dealt with aspects of PTSD, the neurobiological work, in particular, bears most strongly on present and evolving perspectives on PTSD. The neurobiological work also evokes issues that should be of present and future concern to issues of postcombat syndromes that have stress-related components. At the risk of further repetition, it would not be a misstatement to note that in the initial phases of the establishment of the PTSD diagnosis, the dominant focus was on a set of sociopolitical perceptions of the "nature of the war." This included assumptions about the experience of Americans in it and the profound trauma this experience was believed by some, like Lifton, as noted above, to characterize all returning American servicemen.[32] This position of focusing upon external events—the trauma—not unnaturally (despite or because of its political aspects) held great power in the way in which the etiology and to a degree the treatment of PTSD were considered by many practitioners. In 1980, the revised *Diagnostic and Statistical Manual* of the American Psychiatric Association recognized posttraumatic stress disorder as a clinical entity for the first time (American Psychiatric Association, DSM III, 1980). In DSM III, PTSD was listed as one of the anxiety disorders sharing symptoms with a number of other disorders. Its primary distinguishing characteristic was etiological—exposure to an event defined as being outside of normal human experience: This was the "recognizable stressor that would evoke significant symptoms of distress in almost everyone" (American Psychiatric Association, 1980, p. 247).

In addition to the event itself, DSM III included a number of other possible symptoms, such as recurrent intrusive memories of the event, recurrent dreams, or flashbacks. The next class of criteria was based on the numbing of responsiveness to the external world, beginning some time after the event, through either loss of interest in significant activities, feelings of detachment from others, or constriction of affective responses. A final class included at least two of the following symptoms that were not present prior to the event: hyper-

[32]The perceptual set that Lifton brought to his initial work on the traumatization of Vietnam veterans was laid out earlier in his testimony before the Senate Subcommittee on Veterans Affairs in 1971 and published later (Lifton, 1974).

alertness or exaggerated startle response, sleep disturbance, guilt about surviving, memory impairment or trouble concentrating, avoidance of activities that recalled the event, and intensification of symptoms by stimuli resembling the event.

It should be noted that with the possible exception of the startle response, all of these criteria are essentially psychological or psychosocial, with the central issue of exposure to a traumatic event. Many of the criteria adopted had been developed as part of the work by Horowitz (1976 and 1982) on "stress response syndrome" (see below), as well as drawing on Lifton and Shatan's original formulations.

This event-centered etiology was well articulated by Green, Lindy, and Grace in their critique of the DSM III PTSD diagnosis in 1985. While considering the premorbid aspects of breakdown, the authors primarily assign these aspects to characterological factors, and their focus is on the event. In their formulation (Green, Lindy, and Grace, 1985, p. 407),

> the primary determinant of outcome is the nature and intensity (i.e., the objective characteristics) of the external event (the stressor). . . . [A]s the degree of stress becomes more severe a larger proportion of individuals will break down (i.e., develop symptoms). If the stress is sufficiently intense, virtually everyone will develop what would usually be seen as "neurotic symptoms."

Two citations provide exemplars of a break with what might be called the "universalist" causal-thinking cued to combat exposure per se. Green, Lindy, and Grace (1985) noted the problem in operationalizing what classes of stressors produced which levels of pathological effects. A similar position in terms of the "dimensions" of the stressors involved was taken during this period by Laufer, Frey–Wouters, and Gallops (1985, pp. 88–89) who felt that

> the measurement of stressors in PTSD is a complex problem which requires careful conceptualization of the specific phenomenon under study. The early studies of the effects of the war on PTSD concluded too quickly that combat was the key issue. Future research needs to pay careful attention to the relationships between traumatic experience and patterns of subjective reaction to these experiences.

With the passage of time it was becoming obvious that not all those exposed to traumatic events developed PTSD or responded the same way to the event. As a corrective of sorts to the limited DSM III diagnostic category (distinguishable only by the presence of a traumatic event initiating symptoms indistinguishable from those in other disorders), it was proposed to include the Horowitz model of stress response syndromes. (See for example, among Horowitz's many publications, Horowitz, 1982). Horowitz focused on the event and its psychological sequelae, particularly the repetition of perceptions related to the traumatic

event. The critical variables for Horowitz were the unwanted intrusion of memories of the event, avoidance, and numbing.

Based on these considerations Horowitz, Wiulner and Alvarez (1979) developed the "impact of events" scale (IES). The IES became a widely used instrument in epidemiological studies attempting to assess the prevalence of PTSD in a number of populations and was also used for diagnosis by some investigators. It was joined throughout the 1980s by a number of other scales used for both epidemiological and diagnostic assessment—one of the most salient of these is Keane's Mississippi Scale for Combat Related PTSD, widely used with Vietnam veterans (see Keane, Caddell, and Taylor, 1988). A good review of the kinds of psychological assessment instruments utilized in PTSD is that by Newman, Kaloupek, and Keane (1996).

Throughout the initial decade of work on PTSD, while a number of investigators paid some attention to the kinds of physiological phenomena seen in patients diagnosed with PTSD, the major emphases were psychological and psychosocial. Thus, primary emphasis was placed on psychological and behavioral symptoms. Such issues as the level of dysfunction exhibited by the individual, levels of traumatic exposure that would produce symptoms (the issue addressed by Green and others), and the question of the effects of exposure to chronic stress in relation to such symptom production were not really addressed. While the assessment instruments discussed above are essentially oriented to psychological symptoms and constructs, a wide array of physiological symptoms was also noted as characterizing patients diagnosed with PTSD. These included such physiological changes as higher reactivity, startle, hormonal, and other neurophysiological phenomena. These were seen as sequelae initiated by the traumatic exposure and part of the subsequent PTSD condition. Thus in DSM III R, physiological symptoms, in addition to startle, were essentially limited to: "physiologic reactivity upon exposure to events that symbolize or resemble an aspect of the traumatic event." (American Psychiatric Association, 1987, p. 250). Significant work was being done on physiological issues in patients diagnosed with PTSD, as well as on differences between such patients and others. The kind of work done by Mason and his group (1986) at Yale/Westhaven Veterans Administration on differences in cortisol levels is a good exemplar. Most physiological research during this period appears to have centered on the assumed link between physiological reactivity and exposure to stimuli evocative of the traumatic event presumed to have been responsible for the patient's PTSD. This was, of course, particularly true of work done with Vietnam veterans. In work done by Blanchard, Pitman, Mason, Yehuda, and many others, a wide range of psychobiological differences was seen between PTSD patients and others, particularly when exposed to evocative stimuli but also when medications stimulating autonomic arousal were given (as in work

by Rainey et al. and Southwick et al.). See, for example, Blanchard, Kolb, and Pallmeyer, 1982; Blanchard, Kolb, and Gerardi, 1986; and Pitman et al., 1987.

A large number of psycho and neurobiological effects of PTSD have been cited in the literature. These have included gross psychophysiological differences between PTSD patients and controls, neurohormonal differences, neuroanatomical effects, and immunological effects. Many of these effects appear to be real and substantial. It would be important to keep in mind, however, O'Brien's (1998, p. 106) caveats in his review monograph:

> There has been investigation of a massive range of possible biological markers or of indicators of Pathology in PTI [posttraumatic illness] and PTSD. Most of the studies have used small samples, and repetition has not always produced replication, leading to questions about methodology and rigor of application as well as questioning the original findings.

Throughout most of this period, the emphasis remained on the traumatic event as the precipitant of the disorder, and indeed that concept has been critical to the inclusion of PTSD in the various iterations of the DSM. However, some began to question whether exposure to a traumatic event was sufficient to be the sole responsible etiological agent of PTSD. A good example of this questioning is the work of Breslau and Davis (1987a, p. 582), who asserted that there was "insufficient data to show that the set of symptoms characteristic of PTSD is strongly and uniquely associated with extraordinary stressors." They also found, as did others, that the whole of the variance was not explained by the degree of traumatic combat exposure. In their study 35 percent was explained, in others equivalent findings were reported (Breslau and Davis, 1987b).

Such findings certainly influenced the rewriting of the diagnostic criteria for PTSD in DSM IV (American Psychiatric Association, 1994). Certain important changes were made. The operationally meaningless characterization of the traumatic event as outside the "range of usual human experience" was dropped in favor of exposure to a traumatic event in which

> both of the following were present:
>
> (1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of others.
>
> (2) The person's response involved intense fear, helplessness or horror (American Psychiatric Association, 1994, p. 427).

In addition, DSM IV (p. 429) added dysfunction to its diagnostic criteria along with symptom duration of more than one month stating that, "The disturbance causes clinically significant distress or impairment in social, occupational or

other areas of functioning." It also divided the diagnostic categories into two subtypes: acute—less than 3 months—and chronic—more than 3 months.

This change moved the etiology of PTSD from what I have called a universalistic reliance upon the experience of a traumatic event to one involving classes of events interacting with the specific responses of the individual involved. In this sense, the effect of the event was reordered in terms of the way the patient responded to it. This move from absolute to relative valuation was, of course, necessary given the fact that large numbers of persons exposed to highly traumatic events did not develop the symptoms of PTSD. In a simplified sense, this brought those etiologic criteria more closely into line with the strictures developed by Brown and others—assessing the stress-creating power of "life events" defined in terms of the weight given to the event by the respondent. (See, for example, Brown, Harris, and Peto, 1973; Brown et al., 1973; and Brown and Harris, 1978.)

It should be noted that no singular pathophysiology of PTSD is listed—a not uncommon fact when dealing with psychiatric ailments. No major attention is paid to psychobiological or neurobiological phenomena. As with many other psychiatric and psychological diagnostic criteria, as well, categories of symptom sets are listed, and diagnoses are to be made when the patient exhibits some combination of the symptoms.

DSM IV then begins to move toward a more selective diagnosis of the entity called PTSD, but many of the criteria are somewhat amorphous and, to a degree, subjective. The latter is certainly important in clinical practice where, in the absence of hard signs—laboratory tests and other like measurements—the judgment of the practitioner is the final diagnostic authority.

As we can see, the scientific process, based upon querying assumptions with data, began an evolutionary process in terms of etiological assertions and the definition of PTSD. This evolution has continued as investigators have moved from focusing on so-called soft signs (like behavior) to the neurobiology of PTSD. Investigators' findings regarding the neurobiology of PTSD have, for at least a number of key investigators in this field, led to a reconceptualization of the etiology and nature of the disorder. The need for a new conceptualization was laid out by Yehuda and McFarlane (1995). In their article, they pointed out that new findings support the idea of PTSD as a distinct diagnostic entity but that the findings are different from those that arose from psychosocial theory and stress research. Yehuda's work has exemplified the movement away from central focus on the traumatic event in an attempt to scientifically define PTSD, distinguish it from other posttraumatic responses to events, and approach the differences between pathological and nonpathological responses to trauma. In a sense, it moves back to Ransom's (1949) distinction between "the normal

combat reaction" in World War II as opposed to pathological ones. Most men who suffered normal combat reactions went on to live lives not much different from those of their neighbors who had never gone to war. Those in the minority who suffered pathological reactions such as "old sergeants syndrome" (see Sobel, 1949) often required extensive treatment and exhibited a pattern of slow recovery. To Yehuda the challenge is to explain the difference between those who develop PTSD and those who do not. Her work strongly indicates that differences in neurobiology appear to be those that best delineate one group from the other. In simple terms, their autonomic nervous systems respond differently. PTSD victims continue to reexperience the neurochemical responses to stressful and fearful stimuli long after the fact.

The neurobiological issues raised by Yehuda and others also raise the issue of possible predisposition to an abnormal response to a traumatic event. These predispositional factors would not lie in the psyche but in the autonomic nervous system and that might well be amenable to either preventive or *post hoc* biological intervention. Schnurr, Friedman, and Rosenberg (1993) did find, using the Minnesota Multiphasic Personality Inventory (a psychological diagnostic instrument) that some subset of college students' scores appear to have predicted risk for the development of PTSD symptoms, if not PTSD, after combat.

The issues surrounding PTSD as a diagnostic entity remain contentious on many levels. Predisposing factors, preventive techniques, modes of treatment, and etiological conceptions all have partisans of various approaches. For example many, including the U.S. Armed Forces, espouse "critical incident" stress debriefing after exposure to acute trauma as a significant mediator of possible symptom development. In addition, the most recent edition of a standard handbook for crisis intervention workers (Gilliland and James, 1997) recommends this debriefing technique unqualifiedly. From a scientific point of view, the efficacy of critical incident stress debriefing has not yet been proven. It appears to have little or no effect on long-term outcomes but does make both the briefer and the debriefed feel better at the time (see Raphael et al., 1996, and O'Brien, 1998).

These few exemplars of the evolution of PTSD, as in so many of the historical examples reviewed, demonstrate that on the one hand science ultimately is an evolutionary process, and on the other, they demonstrate our continuing capacity to make judgments based on assumptions and beliefs rather than knowledge. The issue of PTSD has served a great function in helping to further our understanding that body/brain-mind/environment are all part of a single open system. It has played a great role in furthering our understanding of the effect of trauma on homeostasis and mental and physical disability as well. It has also

demonstrated that we often, as before and will in the future, know too little and therefore come to assumption-based conclusions, cleaving to them tenaciously.

HEALTH CONSEQUENCES OF SERVICE IN VIETNAM

If sheer physical exposure to trauma is not a sufficiently viable cause of PTSD and if we can hypothecate that human nature and human physiology had not changed so much in a generation (a likely biological or evolutionary proposition), then it constrains us to ask: What accounts for one-third of the deployed cohort presenting themselves as PTSD casualties?

On the one hand, the combination of a diagnosis of PTSD and the experience of the stresses of heavy combat in Vietnam is correlated with long-term health risks. Boscarino's study (1997) of the medical histories of almost 1,400 Vietnam veterans strongly suggests, for example, that those who had been in heavy combat and had a PTSD diagnosis were 50 percent to 150 percent more likely to both contract and develop serious diseases as well as abnormal immune functions 20 years after service in Vietnam. On the other hand, however, in almost all surveys and studies, Vietnam veterans persistently report higher levels of physical symptoms and disease episodes than do nonveterans. The comprehensive CDC Vietnam Experience Study (1988b, p. 2713) concluded that:

> Vietnam veterans more frequently reported current somatic symptoms and physician diagnosed diseases than did non-Vietnam veterans. Most of these conditions were not currently detectable by the comprehensive physical and laboratory screening examinations used in this study.

Almost every study of Vietnam veterans has produced this same outcome: While Vietnam veterans report more adverse health events and symptoms than non–Vietnam veterans, the level of detectable conditions between the two groups does not differ significantly. The implication, then, is that we must look to other causative factors.

HERBICIDE EXPOSURE

Another factor that has been implicated in Vietnam veterans' reporting of PTSD appears to be the widespread concern and beliefs about the health consequences of possible exposure to herbicides in Vietnam. In many ways, these concerns foreshadowed the responses of some of our troops to possible exposure to toxic agents in the Persian Gulf.

Herbicides, particularly the dioxin-based one popularly referred to as "Agent Orange," were used extensively in Vietnam. As a result of rumors, media attention, and interpretations of some laboratory findings, herbicides became the fo-

cus of significant postwar concern about health consequences for veterans and Vietnamese who were exposed to significant levels of them. As part of the Vietnam Experience Study, the CDC did an epidemiological study comparing those in the study who claimed exposure to Agent Orange and those who did not. The results are extremely interesting because of the way they illuminate the power of *post hoc* claims about the threat values of an experienced exposure to shape both causal attribution and symptomatic expression. If the Agent Orange paradigm is indeed one of *post hoc ergo propter hoc,* it underlines the power of postwar stressors to create and intensify causes attributed to wartime happenings. Vietnam veterans, as noted above, reported significantly more health problems and physical symptoms than did nonveterans, and the number of problems increased with the veterans' perceived exposure to Agent Orange.

The conclusions drawn by Decoufle et al. (1992, p. 321) are as follows:

> We identified self-reported exposure to herbicides in Vietnam as an important predictor of outcome reporting among Vietnam veterans. Men who did not report any herbicide exposure in Vietnam (43% of all Vietnam veterans in the study) had a health profile similar to that of non–Vietnam veterans. Among Vietnam veterans, we observed monotonically increasing trends in reporting of most outcomes as levels of perceived herbicide exposure increased. This pattern was even seen for cancer, although this disease category was not reported differently in the overall comparisons between Vietnam and Vietnam era veterans.
>
> At least three considerations argue against these associations (health outcomes and perceived exposure) being indicative of a causal relationship between herbicides and health status. First, it is unlikely that one class of chemical products, such as herbicides, is causally related to a multitude of heterogeneous health outcomes, such as those examined here. Second, other investigators found no relation between the self-reported herbicide exposure index we used and a biologic marker of actual herbicide exposure among US Army veterans who served in Vietnam at least in respect to the dioxin containing herbicides. . . . Finally, in a subset of study participants who underwent a physical examination, there was no relation between objective signs of four major diseases . . . and our herbicide exposure index.

While this investigation, like others, produced data indicating a relationship between PTSD and the extent of combat exposure, the investigators concluded with respect to this other symptomatic group:

> that the strong positive associations that we found between a multitude of reported health outcomes and self-reported herbicide exposure in this group of Vietnam veterans are probably not accounted for exposure to chemical herbicides in Vietnam. Rather, these relations more likely resulted from a combination of psychological stress reactions and conditioning by intense and prolonged media portrayal of herbicides as a health threat that produced

> hypochondriasis, somatization, and increased medical care utilization in some Vietnam veterans (Decoufle et al., 1992, p. 321).[33]

Two other theoretical developments during this time period also have pertinence. One was the development of social support theory—viewing social support as a primary mediator or buffer for the effects of stress.[34] Another arena was the study of the role of life events as stressors having the capacity to predispose the individual to both physical illness and psychological problems. This approach, developed in studies of U.S. Navy personnel by Gunderson and Rahe (1974), became a critical mode of examining the cumulative effects of stress and its consequences. A third area that should be considered is the development of interest in the concept of "culture shock" as a significant source of stress and a probable contributor to both psychological and somatic symptoms.

The differentiation of models and the history of the concept of culture shock were cogently dealt with by Gertrude Marlowe in 1996. As she pointed out (p. 111),

> The medical model of culture shock singles out the depressed, anxious, angry bewilderment state a person living abroad may experience when any of his accustomed cues to everyday behavior disappear and are replaced by unfamiliar ones.

While Gertrude Marlowe quite correctly pointed out that the nexus of culture shock came in interaction with another culture, a specific variant appears to have been played out in the Persian Gulf. In a number of arenas, the cultural patterns of U.S. forces changed markedly in response to the anticipated cultural sensitivities of the Saudi's. Hypothecated Saudi cultural responses thus defined changes in the previously predictable responses of commanders and organizations. (Personal observation and interviews during Operation Desert Storm.)

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[33]It should be pointed out that one of the major concerns about herbicide exposure in Vietnam—that it led to teratogenesis and other birth defects—an area in which Vietnam veterans reported more adverse health events—could not substantiate the self-reports. The reported summary was that:

Vietnam veterans reported more adverse reproductive and child health outcomes in the telephone interview than did non–Vietnam veterans. However, results of a substudy of birth defects documented on hospital birth records showed that Vietnam veterans were not at increased risk of fathering children with birth defects evident at birth (CDC, 1988c).

[34]Strangely enough, this did not develop directly from pertinent observations of military psychiatry in World War II and Korea, which had been pointing out the role of the primary group in mediating stress for decades. The lack of comingling of military findings with civilian findings remains a puzzle.

HOMECOMING PATTERN

The final wide-scale nonindividual factor considered by many to be associated with Vietnam veterans' psychological maladaptation was their homecoming. For many Vietnam veterans, the return was a journey filled with many assaults and insults, akin to those of Odysseus. Veteran's navigated through a psychological and social landscape filled with the symbolic equivalents of Cyclopses, Circes, Scylla, Charybdis, and a galaxy of angry Gods; all, as in Odysseus' case, dedicated to preventing some Vietnam veterans from being psychologically at peace and at home. For many, unless they chose to join therapeutic groups, it was a journey all too often made alone.

In most other wars in this century, soldiers had returned either with their units or with others who had shared their experiences on comparatively slow forms of transportation, usually ships and trains. They traveled as members of groups that provided social support. Their fellows served as primary mediators helping them deal with stressful events and experiences. Sharing common experiences provided normalcy and legitimacy to their actions and their responses to their experiences. This sharing, combined with the consequences of the culture's and society's approbation or disapprobation of those events, served as a mediator of memory to assign long-term value to those murderous and horrific acts, scenes, and consequences that define war. If the war was agreed upon as serving a higher good—as, for example, in the war against Nazi Germany—the assaultive and insulting aspects of memory should be "mediated" by this transvaluation of events. Thus, victory itself can be such a mediator.

The Vietnam War produced no victory. What were the consequences for the soldier of a war in which success was defined in terms of the body count—rather than the destruction of and victory over the enemy? The consequences of the "strategy" of attrition adopted after Ia Drang (see Moore and Galloway, 1992), in anticipation of achieving victory through a 10 or 11:1 casualty differential, do not appear to provide a long-term legitimating goal. Neither, apparently, did continuing combat after "Vietnamization" (the policy of turning combat responsibility over to the South Vietnamese) was announced. The soldier was also not able to share his experience with others, blocking another way of dealing with the stress of war. The soldier often entered a unit singly, because of rotation, and often withdrew from his affective ties as the date of his return home came into view, when he checked off the days on his personal "short-timers" calendar. As an individual he was put on the "bird" home, usually in the midst of strangers who had not shared his experiences, in aircraft seating that militated against the sharing of experiences. Some 17 or so hours later he arrived in the United States. As the antiwar movement grew in size and aggressiveness, he often had to face hostile demonstrations shortly after return. Finally, when he arrived home he was enmeshed in a world of people who had

not shared any of his experiences. He may have been confronted by antiwar activists whose kindest words at the time were "baby killer."

Many in the media and a number of vocal segments of American society stigmatized returning soldiers and focused on the disabilities they were "supposed to have." In the latter phases of the war, the returning veteran was portrayed as a plundering junkie who would unleash an era of crime and violence upon American society such as had never been seen before. He was also characterized, as we have seen, as a seething mass of psychiatric disabilities. Employers were often suspicious of him and fellow students often rejected him and treated him with great hostility. The stress of this kind of homecoming on the vulnerable cannot be overestimated.

The remarkable epilogue to this Odyssey, and a testament to the resiliency of human beings, lies in the fact that the overwhelming majority[35] of Vietnam veterans proceeded with their lives, adapted well, felt that their service had contributed positively to them, and did somewhat better than their nonserving peers. (See, for example, Burkett and Whitley, 1998.) For a minority of returnees, however, the outcome was not positive.

As noted at the beginning of this chapter, the effects of the Vietnam War on its participants might be viewed as paradigmatic for analysis of the psychological effects of war. I certainly have not been able to do them justice comprehensively. However, those effects presented illuminate a number of questions even if there is, as yet, only partial understanding of them. In many senses, the experience of Vietnam taught us to see the veteran as part of a vulnerable population affected by a myriad of environmental stressors that generated various classes of psychological and psychophysiological symptoms. It is reasonable to consider that the responses to the veteran, both sympathetic and unsympathetic, helped to create a continuing environment of stress and apprehension. The psychiatric, etiological, and ideological constructs that a number of physicians and mental health workers brought to the "client" certainly appear to have contributed to this. In a wider sense, the processes that developed for classification, allocation, and attribution of causality and popular cultural expectations and beliefs all contributed to the returned soldiers' stresses and their effects.

Let us proceed to Operations Desert Shield and Desert Storm in the light of the history and groundwork discussed above. This report will then end with some conceptual and theoretical concerns, reflecting on the past 15 years of re-

[35]The most commonly cited figure is 85 percent. There are many sources from various surveys. See, for example, the roundup on the web, *Statistics about the Vietnam War* (www.vhfcn.org/stat.htm).

search—research that, I believe, pushes us toward new frontiers in the integration of the physical, the psychosocial, and the psychological in relation to critical concepts regarding illness.

Chapter Ten

THE GULF WAR: OPERATIONS DESERT SHIELD AND DESERT STORM

During the Gulf War, data were gathered on the stress, psychological status, and self-reported symptoms of a reasonable population of troops during deployment, prior to combat, and at several points following combat. Since I was responsible for organizing and carrying out this particular data gathering effort among U.S. Army personnel, I am able to present primary and historical source data. For the first time, we can systematically look at soldiers' appraisals and responses to the perceived stressors of the deployment. We can then compare these responses and their patterning to the general consequences of combat and deployment.

Even more so than for the Vietnam War, the Gulf War presents us with a grave conundrum. The actual level of combat and combat exposure was minimal compared to past wars. The proportion of the force that required any form of medical attention in the precombat, combat, and prereturn periods was far lower than it would have been in garrison. For most, the stresses of the deployment outweighed the stresses of the combat period. In general, those who perceived themselves as most stressed and symptomatic in the precombat period were those who were most symptomatic following combat and also saw themselves as most stressed by those events following return.

Well after returning, a subset of the population attributed their medical problems to happenings in or during their time in the Gulf. A segment of the force experienced an array of physical and psychological symptoms that began to be attributed not to the erosive nature of the deployment, but to an unknown but probably unique toxin or pathogen. The similarities of these troops to troops returning from Vietnam who claimed exposure to Agent Orange is striking, as is the constant theme of trying to find the "singular" cause of Gulf War illness. This quest and belief has, for many, led to a dismissal or denial of the roles precombat, combat, and postcombat stresses, beliefs, expectations, and fears may have played in the amplification of and anguish caused by symptoms that may have less mysterious origins. These illnesses appear to share the same array of

causal factors that have been noted throughout recent history and that many, particularly a number of veterans, appear to have rejected since Vietnam, in favor of the quest for a singular cause and thus the hoped-for cure.

THE STRESSES OF THE GULF DEPLOYMENT

Because of the perceived ease of the Desert Storm victory, which combined a short period of combat with an exceptionally low level of casualties, a mistaken impression is sometimes held that the operation could not have been a significant source of stress, save for those who were directly involved in traumatic episodes during its course. I believe such perceptions are far from true.

When examining the consequences for its participants, we must see Operations Desert Shield and Desert Storm as a whole and not simply as a reflection of a hundred hours of the ground war. The operations were for many a source of continuing and chronic stresses and apprehensive expectations for months on end. The stressors that affected soldiers ranged from the daily, proximate, and tactile to the distant, symbolic, and perhaps notional. Still, morale was good to high in most cases, and soldiers performed effectively and with humor. But unease and anxiety lurked continuously at the edges, frustration levels were apparently high, and the soldiers' universe was persistently seen and felt as threatening.

Drawing from soldiers' statements in our interviews in the Gulf, we find that many of the usual mediating structures that buffered previous deployments were absent, particularly those provided by interaction with the host society and the opportunities for ease, recreation, diversion, and relief from military routine that such interactions provide. The deployment of U.S. troops to Saudi Arabia in the initial phases of the operation was, in some ways, analogous to deploying a force to "the other side of the moon." While Saudi Arabia is a wealthy country with urban areas that rival any in the Middle East in terms of modern facilities, these areas were off limits to the overwhelming majority of American military personnel. While a number of support personnel operated in such ports of entry as Daharan and Dammam, most Americans were rapidly moved into a desolate hinterland. The agreements made with the Saudi governments that represented the frame of reference of the deployment were designed to keep American impact upon and interaction with the Saudi population to a minimum.[1]

[1]As the guardians of the sacred heartland of Islam and as the heirs and proponents of Wahabbism, the most austere and orthodox form of Sunni Islam, the Saudis have walked a fine line between foreign ties and xenophobia, both within the nation and in the Muslim world at large since the founding of the kingdom in the 1920s. Political and diplomatic considerations in regard to these sensibilities undoubtedly exacerbated the stresses of deployment.

To fully comprehend the stresses in the Gulf, we must examine the multiple contexts that affected the service members who were sent there. The rebuilding of the American military (and particularly of the active Army), following the severe erosion of morale, competence, and internal confidence wrought by the later years of Vietnam and the initial years of the All-Volunteer Force, appears to have passed unnoticed by most Americans. In Panama, where a small, highly skilled, and technologically adept force destroyed the capacity of the Panamanian Armed Forces to operate as an organized entity in a matter of hours, the message of operation "Just Cause" was misread. Far too many simply viewed Panama as the application of an overwhelming weight of fire and personnel against a trivial and ill-prepared enemy. Little attention appears to have been paid to the rapidity of the Panamanian collapse despite the small number of casualties inflicted on their forces, the very small number of civilian casualties, and the lack of use of indirect fire weapons—barred by the rules of engagement. The revolutions in training wrought by the National Training Center, the Joint Training Center, MILES (laser combat simulation) gear, and the use of simulators were also little appreciated.

Prior to the Gulf War, public doubt about our weapons systems was a matter of common discussion.[2] The Apache helicopter gun ship, the Abrams main battle tank, and the Bradley Infantry Fighting Vehicle were all routinely assaulted as potentially ineffective weapons that represented a waste of the taxpayers' money. In some cases they were derided as little more than rolling coffins or as vehicles too delicate and complex to be sustainable on the battlefield. The "smart" weapons developed for use by all services were untried, and the media had tended to focus more on test failures than successes. American forces were also untried; it had been a full generation since Americans had been involved in a major conflict. Minor conflicts had primarily been the province of "elite" and special operations troops, so our "ordinary" soldiers, sailors, Marines, and airmen were considered militarily naive. This was particularly emphasized if they were to go into combat against "the battle hardened and ruthless" Iraqi Army. The drum rolls of fear creation, which began before the first troops had arrived to draw "the line in the sand," continued throughout much of the Desert Shield phase of the deployment.

Complementing the vision of a vulnerable and "victimizable" American force was that of an almost invincible Iraqi military, which had been made combatwise and highly effective by years of conflict with Iran. It was said to be dedicated, cohesive, and well led, and it was assumed to possess high-technological capacity acquired from the former Soviet Union. Iraq was known to possess

[2]Indeed such doubts have, once again, become common in the media and other venues despite the systems' overwhelming, if imperfect, success.

nerve agents and other gas weapons, and both the capacity to deliver them and the will to use them.[3] Major doubts were circulated in the media and in both military and civilian rumor systems about the quality and effectiveness of the U.S. military's gas warfare protective gear and gas detection systems. The protective capacities of this gear and its potential utility under the climatic conditions of Saudi Arabia were often dismissed as probably ineffectual and potentially dangerous. The armed forces were perceived by a number of commentators as basically unprepared to meet a foe with nerve agent potential, despite the fact that they had spent decades preparing to fight the former Soviet Union, whose doctrine had been keyed to the massive use of both short-term and persistent nerve agent in its maneuver scenarios for a possible war with NATO.

Such perceptions of potential defects in our equipment and of enemy strengths were present at the beginning of the deployment, and our interviews showed that they remained part of the soldiers' mental baggage throughout Desert Shield and Desert Storm. These concerns were a continuous aspect of the context of the lives of the deployed troops, reinforced by radio newscasts, CNN, and English-language newspapers and magazines.

ASSESSING STRESS AND ADAPTATION

I led a team from the Walter Reed Army Institute of Research that was sent to the Gulf.[4] Among the questions we were seeking answers to were: How long can we keep people there? How are U.S. soldiers adapting to the Saudi environment? What is going on in terms of "human issues"? How stressful is the experience for them, what are the sources of stress, and what can we do about them?[5]

The Structure of the Studies

Following the mandate to assemble a team and proceed to Saudi Arabia, we decided that the initial approach to the assessment and research would be to carry out a sensing of perceptions, attitudes, behaviors, and conditions in the Gulf. Such a sensing, purely qualitative in nature, would be undertaken prior to attempting any more-rigorous quantitative assessments and research. To carry

[3]Various gases had been used against the Iranians, turning the tide of battle in Iraqi favor at critical points, and nerve agent had been used against villages of rebellious Kurds in Iraq itself, killing thousands.

[4]This was under the sponsorship of General Gordon Sullivan, then the Vice Chief of Staff of the Army, and General William Reno, then the Deputy Chief of Staff for Personnel.

[5]An underlying concern for us was the history of the British force that had been sent in to defend Kuwait from a threatened Iraqi invasion in 1961. It had suffered significant levels of heat, stress, and other medical casualties.

out this study, we had to understand the context and patterns of behavior and perception that characterized the population if we were to ask questions that would elicit meaningful responses. The strategy was to utilize the technique that had been developed in the Division of Neuropsychiatry at the Walter Reed Army Institute of Research (WRAIR), initially in consultation with S.L.A. Marshall. This technique focuses heavily on small group debriefing using preexisting work groups. Decades of previous work in the U.S. Army have demonstrated that adaptation parameters, levels of stress experienced, and soldier well-being and coping are strongly influenced by unit cohesion, unit climate, and the behavior of leaders in the soldier's immediate chain of command. The power of these factors to influence the central tendencies of a given group can often be lost if typical polling of random samples across a military population is used. The award winning work by Bliese and Halverson (1996 and 1998) has demonstrated the significant effects of cohesion and leadership on the central tendency of soldier well-being scores in a number of troop databases (the Army COHORT program and other deployments).

We thus chose companies to interview from among the battalions comprising at least one brigade of each of the deployed divisions during the first survey, which was carried out in September–October 1990. As in our previous work, interviewees were stratified by rank so that there would be no possible constraints placed on free expression by the presence of superiors in rank. In infantry companies, all of the junior enlisted members of squads in selected platoons were interviewed as a group. The squad leaders of that platoon were then interviewed, and platoon leaders as a group also. Company commanders and first sergeants were interviewed individually, as were battalion commanders, sergeants major, brigade commanders, and division commanders. Notes were shared, qualitative data compared, and general patterns drawn by members of the team.

The team returned in October 1990 to brief senior Army staff and prepare for the next wave of data collection. In anticipation of the possibility that American forces in the Gulf would have to engage in combat, a decision was made to broaden the focus of the research. The next interview instruments gathered precombat psychological and stress-related data that might bear on possible combat stress reactions and risk for the development of postcombat syndromes, such as PTSD. The questionnaire for enlisted soldiers included the following sections (in addition to standard demographic information):

- standard psychological assessment instrument—the Brief Symptom Inventory (BSI) of the Hopkins Symptom Check List 90
- a module assessing perceptions of leader effectiveness
- an assessment of individual and unit morale

- instruments developed and standardized at WRAIR over the previous decade for the assessment of both vertical and horizontal cohesion in company-level units.

In addition, based upon interviews that we carried out in the Gulf, instruments (primarily utilizing Likkert scaling) were designed to assess intercurrent stressors experienced by soldiers in the Gulf. Other modules looked at perceptions of family problems and support, deployment concerns, causes of stress, stress mediators, coping strategies, and concerns about potential future combat.

There were two unfortunate lacunae in our approach: We had included no physical symptom checklist and had decided to make combat arms units our first priority. The latter was a deliberate choice. In past conflicts, the overwhelming majority of combat stress and postcombat psychiatric and psychological casualties had come from maneuver units not support organizations. Limitations in personnel and funds thus made it necessary that we target the presumably highest risk group. We returned to the Gulf in November and stayed through mid-December 1990. The research and assessment program included continuing the interviewing program in the battalions we had initially selected, distributing and gathering questionnaires from all soldiers available for duty in the brigades under study, and expanding the program to newly arrived organizations.

In late December, a small team of two officers was dispatched to gather data from newly arrived VIIth Corps Divisions. For the sake of convenience, the questionnaire was shortened and the BSI reduced by psychologists on the WRAIR staff to the subsets dealing primarily with the results of trauma. The BSI appears to be an entrained instrument with military populations and a rise in scores in any segment is paralleled by rises in all. In test work, the correlation between the full scale and the truncated trauma scale was always over 0.9. Data, primarily questionnaire, were collected from a number of VIIth Corps units. (Unfortunately the commercial express delivery company lost a large follow-on shipment of questionnaires, and the team was limited to the instruments it had brought over initially.) The team, a psychiatrist, and a social work officer remained in theater and served as both mental health team and observers in the 2nd Armored Cavalry Regiment during Operation Desert Storm. Because of severe limitations that were placed on entry into the theater, the larger team that had been prepared to deploy in the event of conflict never received clearance to enter the theater.

A new set of instruments, including combat exposure scales, instruments for the assessment of risk for PTSD (the Horowitz IES), instruments for assessing intercurrent life stressors, soldier self-assessments, etc., was added to the base instruments used in the precombat period. In the proximate postcombat pe-

riod, permission was received for one officer, a psychologist, to enter the theater, and some data were gathered. At the same time, a debriefing program, including a wide-scale questionnaire, was set up to gather data from units as they returned. It was decided to continue to focus on the brigades already under study and to expand the postcombat studies to look at units for which precombat data were not available. A first wave of questionnaire and interview studies was carried out in the period of May to September 1991. Essentially the same questionnaire was used for units in Germany (USAREUR) in November and December 1991 and another division in the continental United States (CONUS) in January 1992. In June and July of 1992, a follow-up survey was mailed to soldiers in the original database who were still on active duty. It included the BSI, the IES, the unit-cohesion modules, and a module on current stressful life experiences—it generated approximately a 35 percent rate of return.

A final survey wave was carried out approximately two years after Operation Desert Storm between November 1992 and January 1993. It included some shortened forms of some scales based upon analyses of previous data. The number of those remaining on active duty who had served in the Gulf obviously decreased during this period, but data were gathered from each entire brigade (i.e., all soldiers present for duty who agreed to participate during the data gathering period).

The populations for each survey wave were:

1. Precombat surveys in Saudi Arabia—2,853
2. First postcombat surveys, Saudi Arabia, CONUS, USAREUR—12,816
3. Mail survey—2,012
4. Final postcombat survey—5,084

The Field Study and Assessment Phase

We arrived in September 1990, when the deployment was a little over a month old. We operated on the assumption that this might be a prolonged siege, since there was, at that point, no firm public decision that we would necessarily go to war to liberate Kuwait. On our first trip to Saudi Arabia, we interviewed between 800 and 900 troops, primarily in small groups; senior leaders and commanders were interviewed individually. Our interviews took place primarily in Army combat arms units with some sampling of support personnel. Interviews took place both in cantonments and in those forward units deployed in the field, which would serve as the initial lines of defense against a possible Iraqi invasion.

FACTORS CONTRIBUTING TO THE STRESS OF THE DEPLOYMENT

It is an old and oft repeated saw that war is a prolonged period of waiting and boredom punctuated by brief periods of terror. I believe this assessment is in need of revision. Boredom, or some equivalent, may well have been the dominant behavioral state of soldiers in periods between pulses of battle when relative security existed and when there was no actual attack or exchange of fire. This was comparatively true of the latter half of World War II and most of the Korean War. In the Persian Gulf,[6] however, there was a constant undertone of apprehension and stress, ranging from vague unease to strong overt apprehension, referable to an ambiguous environment—superficially peaceful, but with constant lurking threats. Many of these threats were real, some were amplifications of possibilities, and others were fantasized but structured as real parts of the environment.

The soldiers of an airborne brigade that was the initial force deployed to the Persian Gulf were well aware of their limited capacity to contain or defeat a significant thrust by an Iraqi heavy force. They did not have a plethora of antitank munitions nor were there immediate reinforcements with major warfighting capacity at hand. As they described their situation to us,[7] they had viewed their mission as sacrificial. They were, in their terms, to be a speed bump, to try to hold up Iraqi forces for as long as possible if they struck toward the oil fields or Riyadh. After that, according to many, their guidance was to head west into the desert and find "spider holes" to crawl into—then the Navy would try to get helicopters in to get them out. It is important to point out that this task had been accepted willingly.

As the ready brigade of the 82nd Airborne division, these soldiers were prepared to deploy anywhere and do whatever was asked of them. When we saw them in September 1990, there was a basic perception that they were a "time-limited" force that had done its job and should now be on the way home. The soldiers' view of the division, and in good part the division's view of itself, is as a "forced-entry asset." Their perceived task is to seize an airhead, neutralize the enemy locally, and provide the conditions for the entry and takeover of the mission by a heavier "conventional force," either Army or Marine Corps, that would carry out a more sustained battle scenario. The Marines were already there, and heavier Army forces had also arrived. But instead of being withdrawn to train for a new forced-entry mission, this unit of the 82nd Airborne had been detailed

[6]Different in way and degree from Vietnam when I carried out work there during the advisory period in 1964.

[7]This was a couple of weeks after having been replaced in their frontline positions by a Marine Expeditionary Force and after significant Army antiarmor and armored forces had begun to arrive in theater.

to the static task of guarding ARAMCO oil production and pumping facilities. A number of soldiers saw it as a misuse of their skills, training, and abilities. They felt they were performing a task that was legitimate for military police but not for paratroopers.

There was, for members of the airborne brigade and almost all other soldiers who were in the theater, the stress created by the ambiguity of the situation at the time. What was the United States going to do? How long would the deployment last? If we were not going to war, would they be there for weeks, months, or years? If this was to be a siege, when would they be rotated out? Three months? Six months? A year? Two years? Rumors were rife and answers were not forthcoming.

For many, deployment itself was described as extremely stressful because of the number of false starts they had been through. Members of some units had repeatedly said good-bye to their families and gone to the ramp with the expectation that they would fly out to the Gulf immediately only to have the trip canceled. The confusion and the multiple good-byes were very upsetting. After four or five false starts, some soldiers now questioned the competence of the entire operation. For others, simply deploying in an emergency fashion into an "imminent danger theater" was a major source of stress. Since the end of the Vietnam conflict, almost all unprogrammed deployments into potentially dangerous situations had been limited to Special Operations, Airborne, Army Light Division, and Marine Expeditionary Units—troops doctrinally prepared and trained for immediate deployment. Conventional and heavy forces had deployed only on training exercises, such as rotations to the NTC (National Training Center) or REFORGER (Return of Forces to Germany).

STRESS GENERATED BY CONCERNS ABOUT HOME

Almost all work done on stress has consistently demonstrated that stressors are additive and probably cumulative. New stressors do not displace old ones. The stresses of the deployment are added to the ones brought from or generated at home. More specific ones about home reinforced the locally generated concerns and stressors. Mail service was appallingly slow. Communication to and from home was measured in weeks, rather than days for the regular mail or seconds for telephone service that Americans have come to expect.[8] For Gulf-de-

[8]It must be remembered that as opposed to World War II, Korea, and even Vietnam, the revolution in telecommunications technology that has taken place in the last two decades has defined a set of basic expectations about communications between the deployment or combat zone and home that are radically different from those of the past. Instantaniety of communication is not simply valued—it is expected as the "normal" way of maintaining contact at a distance. In Panama, for exam-

ployed Army personnel, telephone communication was difficult to impossible. For most it was simply not available. Therefore, problems at home could not be understood and dealt with in reasonable time frames. In some cases, this was underlined by beliefs, both true and fantasized, about potential dangers both to family members and property at home.[9] For a number in the Army, the salience of these issues was increased by the perception of a status of relative deprivation compared to other services—it was common knowledge that Air Force personnel had regular phone contact with home while soldiers did not.

In November and December 1990, a significant minority of XVIIIth Airborne and VIIth Corps soldiers from our sample registered dissatisfaction with a number of family support issues. Over 22 percent of both samples had a low level of confidence in the effectiveness of their family support groups. Almost 23 percent of the former division and over 21 percent of the latter corps had low confidence that their family support groups would help their families if needed, while almost 30 percent of both samples had low confidence that their units' rear detachments would help their families if required. A somewhat smaller percentage of soldiers asserted that they had moderate to major family problems at home before deployment. Approximately 10 percent felt that there were family problems that "required" them to be home to deal with, although under 3 percent stated that they had requested to return home to deal with family problems.

The most salient stressor during this initial period was the high level of concern about a projected date of return to the United States. The question asked most often was, "When are we going home?" The deployment was perceived as open ended, which was very disturbing to most troops. Again, open-ended deployments had not been a part of Army culture since World War II. Even in combat such as Korea and Vietnam, the rotation system had bounded the time the soldier would spend away. Study after study, beginning with *The American Soldier* (Stouffer et al., 1949), has demonstrated that fundamentally, Americans fight "to go home."

Underlying the apprehension and concern about how long the deployment might last was the new experience of deploying a majority married professional Army. Over 60 percent of the force deployed to the Gulf was married and eager to return to spouses and children and certainly a significant proportion of unmarried soldiers were engaged in stable, long-term relationships at the time of

ple, the instant shooting died down, soldiers were lined up at public telephone booths with their credit cards in hand.

[9]The lack of real immediate knowledge about events at home was substituted for by rumor. There was concern about personal property, particularly automobiles that had been left behind, in some cases parked on the street, in others in company areas. Stories of theft and burglary had begun to circulate through the force.

deployment.[10] Chaplains noted that "Dear John" letters ending marriages or relationships arrived and were having the predictable psychological effects on the recipients and their primary groups. The best off-hand measure of the level of concern about deployment length was, I believe, the extraordinary number and variety of rumors that swept through each group about rotation dates home. These rumors came in letters from home in which spouses asserted that they had been given dates by the rear detachment of "x" weeks later of when the unit would return and also arose out of interactions between soldiers and mid-level leaders. Each denial and each failure to be alerted within the specified time was met with disappointment and a new round of rumors.

The ghosts of Vietnam were also present, particularly in generally expressed concerns about whether or not the nation supported the troops in this deployment. In the early stages of the deployment, even the lack of any significant antiwar movement at home did not still a sense of unease. Congressional debate stirred echoes of a past rejection of the military that few had lived through but many knew about. The paucity of news sources during this period undoubtedly contributed to the fogginess about where the nation stood in relation to the deployment.[11]

STRESSFUL LIVING CONDITIONS

Living conditions varied, but few were luxurious. In some places, corps and division headquarters were in comparatively new Saudi military facilities. The gleaming concrete contemporary buildings and billets were deceptive since there was extensive internal crowding. These facilities were often surrounded by large and equally crowded "tent cities." Despite the "modernity" of these facilities, soldiers were physically and psychologically constricted. For the overwhelming majority of the force, there was no place to go—no place for people to physically escape from each other. The crowding—often considered a major source of stress—and the omnipresence of leaders gave soldiers and leaders both a sense of constant unbroken evaluation of each by the other to the discomfort of both.

A number of the techniques that armies had developed over the centuries to provide privacy for psychological and social space when there were no physical boundaries were relearned during the course of the deployment. For many, previous experience of living together under field conditions had been limited

[10]We can hypothecate this from interviews and from the overall changes in relationships that have taken place in American society.

[11]Radio news was passed around and hunted for; the Saudi English-language press, when it was available, also had a wide audience.

to short-term deployment exercises. Unlike the "old Army," in which one learned the cultural techniques for dealing with the potential stresses of prolonged crowding and observation by living in open platoon bays in which the necessary covert rules of behavior were a constant part of the soldiers socialization, a majority of these soldiers lived off post when at their home stations and in two- or three-man rooms when in billets.

The stresses created by these aspects of crowding were, of course, not universal. A number of junior leaders felt that aspects of it were positive. They and their men were truly getting to know each other and becoming a cohesive team. For others this was a source of chronic low-level erosion in relationships, among soldiers and between soldiers and their leaders. In interviews, a number of leaders and soldiers were adamant about the need to get away from each other and the emotional costs of this enforced togetherness. Over and over again each enunciated the sentiment: How the hell do I get away from them—my fellow soldiers, my leaders, my followers? For most, this was a new experience, because time-limited short field exercises prevented enforced intimacy.[12]

Living space was, overall, a chronic and persistent stressor.[13] In one division, many of the soldiers were living in holes next to their vehicles because cots and tents had not arrived. A number had cobbled shelters together from packing crates, spare bits of wood, and cardboard cartons. In a number of other places, particularly where troops were close to centers of population or strategic locations, military cantonments were in and around warehouses and on patches of industrial wasteland. One brigade of the 82nd Airborne that I spent some time with in our September–October visit period was centered on an old warehouse complex. The interior was a sea of cots with only inches between them. A circumscribed area outside was filled with tentage and equipment. Other battalions were housed in close packed rows of tents in nearby areas that might charitably be described as outside storage yards. A number of the areas rented for the erection of tentage and other troop housing might have been described as wastelands or dumps. At this time, the common denominator of life for most of our troops was crowding amid vast emptiness and fairly complete isolation in

[12]Here soldiers were under 24-hour a day observation. Here platoon leaders lived with their platoons. Company commanders were in the middle of their companies, and in many cases battalion commanders' tents were in the middle of one of their companies in the midst of their battalion. While a number used the situation creatively to enhance the readiness and bonding of their organizations, most still yearned to be able to get away and go somewhere where they might "let down [their] hair." Again we must recognize that for many, there was no place to go—one stayed behind the wire of the encampment or at best could walk out beyond a nearby sand dune in the desert to snatch a few moments of privacy.

[13]This was particularly true for those in the combat arms. Many of these soldiers were both socially and physically crowded together while living in the midst of an empty desert—an environment of almost utter barrenness.

proximity to modern cities. In a land of limitless horizons, many of our military personnel lived lives as constricted as sardines in a can.

There was little MWR (morale, welfare, recreation) equipment available. If the soldiers' military organization had not brought things with them into the theater on the initial deployment, there were few books, athletic equipment, movies, etc. available. They were, at best, in transit. The infrastructure that was being erected was being built upon the emptiness of the steppe and desert. Units began creating athletic equipment out of materials that were at hand. Weight sets were made out of cement and reinforcing bars. Funds were allocated to purchase ancillary sports equipment from Saudi stores by those authorized to enter towns. For troops deployed in the desert, most recreation was reduced to the time-honored forms utilized by men in isolation with few resources. Just as soldiers organized rat races in the trenches of World War I, our troops organized scorpion fights—get two scorpions, put them in a box, and bet on the outcome of the fight.[14]

Stresses generated by crowding and lack of recreation undoubtedly added to and amplified the stresses of social and psychological isolation that characterized a large number of base encampments. Life was almost completely restricted to what could be done within the very limited areas inside the wire, fence, or walls that encircled the base. Occasionally a soldier would say, "I came here to fight for these people and I feel like I'm in jail." Soldiers were often both impressed and disturbed by the contrast between the reception that they got from "ordinary" Saudis when their convoys moved through towns or people came by their bases and the rules that isolated them from the population. Saudis smiled, waved, and gave other expressions of friendship; yet, the rules isolated them from the population and dictated many aspects of their behavior and dress. Many complained that their commanders were "out-Saudiing" the Saudis in terms of the restrictions that were placed upon them. Many women, in particular, and some men, described a sense of identity loss at not being able to dress and act like Americans. This represented for some a subtle but continuing source of discontent and a sense of pressure. As one woman working in a unit of the Division Support Command (DISCOM) of an Army combat division put it,

> In this heat the guys can all work in their T-shirts, I have to wear my sleeves down and buttoned. They say it might offend some Saudi male if he came in here and saw my bare arms. There's never been a Saudi in here and even if there were . . . it just eats at you.

[14]Tournaments were arranged between squads and then platoons. A dramatic variant was to arrange a battle to the death between a scorpion and a toad. The fact that these bouts were primary sources of entertainment underlines the austerity of the environment.

This set of stressors is probably akin to the generalized stresses of a form of culture shock (see above) since these dress codes and behavioral norms were dictated by Saudi culture rather than by our own.

STRESSES GENERATED BY THE PERCEIVED THREAT

It is important to note that the isolation of the force was considered necessary for many good and sufficient reasons. However, we must remember that necessary acts may also have unintended collateral consequences that cannot be easily avoided. Concern about the possibility of terrorist attacks was a chronic source of apprehension for many of our troops.[15]

In a number of venues, soldiers went on their physical training runs in helmets and Kevlar body armor. In some, they were required to wear body armor throughout the day. Terrorism and the Middle East are inseparable in the American consciousness, and suspicion was rife. There was chronic suspicion of strangers, of vehicles that approached the encampments, and of many of the Saudis' guest workers.

Soldiers were aware, through letters and, ultimately, conversations with home, and became more aware as time went on when they got television sets, downlinks, and CNN, of the extraordinarily high casualties we were expected to suffer if war came. In the initial period of the deployment, many were aware of the fact that the force was still badly outnumbered and outgunned. In the event of an attack, they did not doubt that they could hold the Iraqis, but there was concern over the potential level of casualties. In part because of the media, there was an extraordinarily high estimate of Iraqi military capabilities. Years of high valuation of Soviet military equipment were reflected in some of this, but another phenomenon seemed at work. The Iraqi military was viewed as mirroring our forces, armed and equipped with technologies that might be as advanced as ours. While such views were not heard at senior levels, they were commonly discussed among many soldiers when interviewed.[16]

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[15]One aspect of the physical and social isolation of much of the force was, of course, to provide maximum defense against the possibility of terrorism. Lessons from Vietnam and above all from Beirut had obviously played their part in the command decisionmaking processes.

[16]As an example, I was out with one group that was deployed fairly closely to the Kuwait/Iraqi border. These soldiers, including some junior officers and noncommissioned officers, were convinced that they were surrounded by Iraqi special forces, who were busy typing into their handheld computers all the information required to drop Iraqi missiles directly on them.

ORGANIZATIONALLY ATTRIBUTED STRESSORS

In some units, problems were compounded by the large numbers of "fillers," i.e., soldiers new to the organization who had been rapidly moved in just prior to debarkation to bring various divisions up to combat strength. This caused extensive primary group disruption because of the need to form new primary task groups, crews, squads etc., out of strangers. Thus, those aspects of unit bonding and cohesion based upon knowledge of the skills and reliability of fellow soldiers and small-unit leaders were absent. In time, these issues would be more or less resolved, but they were the source of nagging doubts about immediate combat. In some cases, the concerns among commanders about the lack of collective training, bonding, and seasoning of squads and platoons led to further increases in stress for the troops. Some senior leaders pushed their people in highly stressful ways in attempts to rapidly bond their units, speed adaptation to the desert environment, and develop collective skills.

Sleep deprivation and severe physical stress were typical among support troops. Many worked 14- and 15-hour days, six and seven days a week building an infrastructure that would support hundreds of thousands of troops, prepare them for battle, provide enhanced training, protect them before battle, and sustain them in combat. The work was continuous and exhausting. These stresses were added to and increased by the pressure of unknown enemy intentions. This was equally true for the "fillers," who entered units with no ties to the already existent personnel and no knowledge about the level of support that they would receive.[17]

In our interviews and questionnaires, we found that units that had experienced problems prior to deployment (particularly those in which there were leadership problems at home bases) tended to be those whose members exhibited the most stress and had the most problems coping with that stress in the desert. Deployment and preparation for possible combat worked no magical transformation in leader-soldier or soldier-soldier relationships. Where problems of perceived competency, care, and intention had existed at home, they were, in most cases, magnified by the possibilities of an imminent dangerous deployment. Perceived marginal leadership or marginal fellow-soldier competence consistently increased levels of apprehension about the consequences of going

[17]There was an additional problem. In many cases, the families of the "filler" personnel remained under the sponsorship of the units from which they had been taken. This fact increased concerns about family support since the rear detachment supporting the families of the unit of present assignment might be at a different post from the one at which their family was quartered. The numbers involved were not trivial, 21.4 percent of a sample from combat arms units in the XVIIIth Airborne Corps stated that they had been in their present companies for less than three months at the time of deployment, 25.6 percent of the VIIth Corps sample asserted the same. These proportions rose to 24.1 and 32.5 percent, respectively, for time in the present platoon, and 29.5 and 37.5 percent, respectively, for time in the present squad.

into combat. While the majority of soldiers rated their leaders as average or above average, a significant number in both XVIIIth Airborne and VIIth Corps rated them as below average in the period prior to combat (see Table 10.1).

OTHER SOURCES OF STRESS

There were other nagging and chronic sources of stress for the troops. Climate was one—the daytime desert heat alternating with the chill of night. Flies were a constant annoyance, particularly for troops in the field, settling on food and hovering around hands and faces. Troops in some organizations were, after several months in the field, still eating MREs (meals ready to eat)—the Army's emergency combat ration—three times a day because their T-Packs and supplementary Class A rations had not yet arrived.[18]

STRESS MEDIATORS

As the theater infrastructure was built and matured and as time passed, a number of problems and sources of stress did moderate. For some, the rumors of robbery, burglary, and threat to families became realities. At one site we surveyed, a battalion commander was informed that burglars had broken into his house at home the evening before but had not been able to penetrate beyond the kitchen where his wife and sons had barricaded the door. The post commander, he was informed, had now posted armed guards in the housing areas. This news, which spread rapidly, cast a pall over his entire organization—in part because of the esteem in which this officer was held and in part because of concerns about other families at the same post.

Table 10.1

Precombat Leader Effectiveness Percentage Ratings in XVIIIth and VIIth Corps

	XVIIIth[a]		VIIth[b]	
Leadership Position	Average or Above	Below Average	Average or Above	Below Average
Platoon sergeant	77.2	22.8	81.8	19.2
First sergeant	84.5	15.5	78.0	22.0
Platoon leader	81.1	19.9	81.7	19.3
Company commander	82.8	17.2	82.2	18.8

NOTE: All soldiers rated at least one position but not all rated all positions.

[a]Sample number equals approximately 1,140.

[b]Sample number equals approximately 1,440.

[18]In many cases, the bulk of the MRE contents were being thrown away. In some desert cantonments, there were great piles of discarded MRE packages from which crackers, peanut butter, and candy had been removed and main course tossed on the refuse heap.

As the deployment progressed, a number of the initial sources of stress were dealt with and moderated as the theater infrastructure matured. While crowding continued, the supply of tentage and cots was adequate for all the troops by the November–December time period. T-packs, supplemented by at least some Class A rations, were now widely available, and, in the field, MREs were seldom utilized for more than one meal a day. By the end of November, telephone banks had solved a number of the problems of communication with home but had by no means resolved all the worry and strain. Unit recreation centers with large screen television sets and athletic equipment offered at least partial escape from the omnipresent chain of command in most organizations. The cruise ships, docked at Bahrain, the rest and recreation facility at Half Moon Bay, and the ARAMCO "home visit" program all offered relief to part of the force. A Thanksgiving dinner, including a presidential visit and celebration, provided another moment of relief.

One important resolution was the end of the fear of being treated with the same rejection experienced by Vietnam veterans. The outpouring of support from the American people was truly meaningful to the troops. Soldiers were deluged by "any soldier" letters, boxes of cookies and candy, and a tidal wave of other messages of support. The massive arrival of new equipment, the imminent arrival of VIIth Corps, and the military edge represented by the M1A1 Abrams tank all contributed to an easing about the capability of dealing with Iraq's heavy armored forces.[19] With the exception of a minority of units in which leadership was still characterized as ineffective, unit cohesion had climbed to high levels.[20] While measurements of levels of bonding were well above those of conventional units we had studied in the past (and indeed reached levels previously seen only on elite and COHORT units)[21], problems still existed. While certain stresses moderated, other stressors increased as the force prepared for war and its possible consequences.

POPULATION VARIATION IN RESPONSE TO STRESSORS

The ability of stressors to affect humans and the complementary ability of stress mediators (such as cohesion) to moderate or buffer stress effects are widely ac-

[19]The depth and reality of this alleviation are illustrated by two conversations I had. One with a colonel in the 82nd Airborne, who spoke of his great relief when the Marines had arrived to take over and provide a heavier line of defense to his position at Al Jubail. The other was several years after the war with a Marine general who spoke of his great relief after the 24th Division had arrived bringing in armor (M1 tanks) that could handle Iraqi T 72s. All he had in his initial deployment were obsolescent M60A1s.

[20]However, problems remained (see Wright et al., 1995).

[21]Cohesion, operational readiness and training units, which are designed for maximum cohesiveness and collective training skills development.

knowledged to be enmeshed in both cultural and individual cognitive modes of perception and allocation of value (see, e.g., Brown and Harris, 1978). The sources of these differences and the differential consequences that exposures to stressors have for various subsets of the population remain open to debate, since there are many ambiguities in the data. However, it seems fairly probable that life event stressors in tandem with their mediators appear to be contributing factors, but not primary causal factors, in subsequent health problems (see, e.g., Gelder, Gath, and Mayou, 1991). Thus, it is important to record that the processes and events perceived as stressful during the course of the deployment varied widely among soldiers in our sample. In response to a set of questions[22] about subjective "levels" of stress, approximately 8 percent of soldiers responded to most topics as areas that were generating "quite a bit of" or "extreme" stress for them. Some topic headings were perceived as stressful by much wider segments of the population. In general, those who responded with the highest scores to the stressors that characterized the deployment tended to produce the highest (i.e., most symptomatic) scores on the Brief Symptom Inventory, a subset of the Hopkins Symptom Check List 90. Table 10.2 lists the questions to which 16 percent or less of the XVIIIth Airborne Corps sample responded this generated "quite a bit" or "extreme stress." Table 10.3 lists the questions to which 16 percent or more of the soldiers responded this generated "quite a bit" or "extreme" stress.

It is apparent from Table 10.3 that the most widespread perceived sources of high stress were those that involved alterations in normal predeployment life and behavior patterns, family issues, and privacy. It is clear from our interviews and the infinitesimal number of people evacuated from the theater for problems due to alcohol withdrawal that the stress from the lack of alcoholic beverages was symbolic and not physiological. The glass of beer that symbolized the pattern of off-duty relaxation had vanished—along with any significant off-duty time. The issues of crowding and privacy appear to have been very important ones. The sample scored the highest levels we had ever recorded on the "hostility scale" of the Brief Symptom Inventory. This was paralleled in interviews and observations. There had been a shift to fairly rough body contact sports and intense "sand wrestling" bouts, particularly between soldiers occupying the same tents. Athletic injuries, according to battalion surgeons and physician assistants whom we interviewed, had become the major reason for medical care and evacuations to hospitals, both within and outside the theater.

The multiple structures for allocating perceived stress causations, coping and mediation mechanisms, and some of the explicit biases of terms of "sources" are seen in the gross responses in the XVIIIth Airborne Corps' sample, pre-

[22]Developed out of materials used in the September–October interviews.

Table 10.2

Questions to Which 16 Percent or Less of the Sample Responded This Caused "Quite a Bit" or "Extreme" Stress During the Past Week

Operating in the desert sand	15.6%
Not being able to accomplish your mission while wearing MOPP[a] gear	14.5%
Scorpions, snakes, spiders	14.2%
Severe change in temperature from day to night	13.5%
Terrorist attacks	11.5%
Not having enough physical energy to do your job	11.5%
Talk about QMP[b] cuts	11.0%
Shift work	10.5%
Not having bottled water	10.4%
Desert storms	10.2%
Having to train at night	10.1%
Not having time or place to practice your religion	10.0%
Terrorist threat	9.4%
Not being allowed to practice your religion because of host nation restrictions	8.0%
Becoming dehydrated	3.7%

NOTE: Sample number equals 1,309.

[a]Military operational protective posture.

[b]Quality military performance, which was perceived by soldiers as a way of getting rid of those who had lower-quality performance.

sented in Table 10.4. We attempted to discriminate between categories that were coping mechanisms for some, and might be sources of stress for others. The questions were phrased as "During the past two weeks, 'X' caused me stress" and "During the past two weeks, 'X' helped me cope with stress." Clearly, certain issues are predominately seen as either perceived sources of stress or as coping aids. It should be remembered that while such allocations might be overwhelming, each category served some segments of the population differently than others. Some even responded that the section or issue involved had done both.

Leaving aside the small group of soldiers who responded to each category as having stressful implications for them (approximately 7 percent of the sample), with the exception of a few bimodal categories, we find clear demarcation between stressors and mediators. These both reinforce and parallel the materials gathered in interviews. To some degree, these sources of stress and patterns of mediation were counterbalanced by the sense of relief that soldiers felt when they decided Operation Desert Storm (ODS) was headed for a military solution. Soldiers approached the thought of combat complexly. There was, as can be seen in the tables, apprehension and stressful feelings about combat and its

Table 10.3

Questions to Which over 16 Percent of the Sample Responded This Caused "Quite a Bit" or "Extreme" Stress During the Past Week

Not having the opposite sex around	69.1%
Flies	54.3%
Lack of contact with your family back home	46.2%
Not having private time	43.1%
Not being able to act like Americans	38.4%
Eating "meals ready to eat" a lot of the time	37.1%
People in other units having things better than you	35.6%
Having your leaders around too much	33.5%
Lack of alcoholic beverages	32.4%
Lack of adequate morale, welfare, recreation	30.6%
Illness or problems in your family back home	28.1%
Lack of understanding about why you were deployed to the Middle East	25.8%
Eating T-Rations a lot of the time	25.7%
Unusually long duty days	25.1%
Having to do extra details	24.6%
Not being able to stay in shape	23.2%
Being at MOPP[a] level 3 or 4 for a long period of time	22.9%
Maintaining equipment in desert operations	22.6%
Behavior restrictions in the presence of the Saudis	22.1%
Lack of confidence in MOPP[a] gear	21.6%
What you see or hear on TV or radio about Operation Desert Storm	19.6%
Operating in desert heat	19.3%
Crowding at base camps	19.3%
Fights or quarrels among soldiers in your squad/section or platoon	19.3%
Not getting enough sleep	18.9%
Talk about projected cuts in Army strength	17.0%
Talk about reductions in force in my pay grade	16.5%
What your family members write to you about Operation Desert Storm	16.4%

NOTE: Sample number equals 1,309.

[a]Military operational protective posture.

possible consequences. There was also the positive sense that it would bring closure to the weariness and ambiguity of an open-ended deployment.[23]

There were other sources of stress that came out in our interviewing—a number of these most affected Reserve and National Guard units. These units expressed

[23]Generally, going into combat meant moving onto the road home. As a number of soldiers put it in interviews, "God help those poor damned Iraqis. They are between me and my wife and kids. They don't stand a chance. I will roll right over them to get home." In addition, one of the other widespread feelings about going into combat was that it represented the ultimate test of both oneself and one's training. Soldiers wondered aloud about whether or not they really were as good as they thought, or were told, they were. The most common metaphor was the Superbowl: ODS would be the ultimate test, their Superbowl. For a subset of mid-level noncommissioned officers, this was counterpointed by bitterness about their possible future in light of the Army's projected downsizing. A number of them, in interviews with me, used variants of the sentiment, "I will go into Iraq, get my ass shot off, do what we need to do, and then they will give me a pink slip when I get off the aircraft at home."

Table 10.4

Categories Perceived as Sources of Stress or as Coping Aids by XVIIIth Airborne Sample

Topic Area	% Caused Stress	% Helped Cope
Length of tour	69.6	8.4
Not knowing if we will go into combat	60.9	13.1
What I think the Iraqis might do	44.3	13.3
Sanitary conditions	44.0	21.0
Chain of command	43.9	25.2
Length of time between field rotations	41.3	15.3
Present living conditions	39.2	23.7
Lack of variety in things to do	36.9	11.0
Rumors	36.6	21.8
Command information	33.5	36.9
Family problems*	33.2	9.6
Training	31.6	37.6
Other soldiers in platoon/squad	31.4	46.7
Heat and climate	29.5	14.6
Information about Iraq	29.2	38.7
Choices as to how I spend my time	29.2	30.8
Health concerns*	26.8	22.2
Improvements in living conditions	23.5	41.1
Newspapers	20.0	46.6
Letters from home	17.7	85.5
Phone calls home	15.9	67.9
Rest days	13.6	60.5
Trips to rest areas*	13.6	33.8
Armed Forces Network radio	9.6	43.4
Entertainment we create	9.3	60.3
Cold sodas/munchies	7.7	51.2
Chaplain visits*	7.5	27.7
Sports	7.1	58.5
Watching TV*	7.1	36.2
Reading books	6.2	55.0

NOTES: Sample number equals 1,309. The responses were made on a simple three-point scale: 1. a little bit, 2. moderately, 3. quite a bit. For the sake of convenience, I consolidate the "moderately" and "quite a bit" percentages as indicating a more than trivial response and list only those. The sample is drawn from battalions selected from the divisions of XVIIIth Airborne Corps in November and December, 1990. In many cases, the category was not responded to by part of the sample. I have marked with an asterisk those categories in which over 40 percent of the sample either responded "does not apply" or had missing responses to both possible response sets.

greater concern than others did about family support, since a number of the institutions that take care of family problems in the active force did not then exist in the Guard and Reserve. In addition, a number of these interviewees

pointed out substantive problems with equipment.[24] In some cases, soldiers complained bitterly about the way they thought they were being treated. A common sentiment was that the active force treated them as if they were "the red haired orphan" in the family. They felt that they were not being well-integrated and that facilities and messes were not being properly shared. A number of these soldiers felt that, at the higher levels, their leadership really did not seem to know what to do. A number also felt that their lives had been terribly disrupted and that their careers and their finances would suffer a great deal.[25] Reservists maintained their morale and did their work well, but many lived with a constant undercurrent of worry.

STRESSES IN ANTICIPATION OF COMBAT

While a number of the sources of stress due to environment and infrastructure moderated over time, others became more salient in anticipation of combat. One question we wanted to explore was whether or not cultural expectations of the potential stressfulness of events prefigured actual stressfulness claimed if the events were experienced. Thus we asked soldiers to indicate how much worry or stress certain events might cause them should combat occur. Their responses are shown in Table 10.5.

Certain important observations should be made at this point. Despite the matrix of stressors that many soldiers experienced, both morale and health were good. The arenas in which stress was expressed were interpersonal—in evaluation of leaders and the normal griping soldiers do. These were manifest in one of our studies in an apparent increase in cigarette smoking, and in significant levels of symptom presentation on the Brief Symptom Inventory.[26] Both sick-call rates and mental health referrals were reported to us as having gone down. Most physician assistants and divisional mental health personnel asserted that their patient loads were about one-third of those in the garrison. This kind of drop during deployment is not uncommon but may be of particular note here. In our interviews it was obvious that, for almost all soldiers, obligations to each other and the mission came first. Thus they would bear anything and everything because of the obligations that bonding and interdependency required of

[24]For example, large numbers of inoperative vehicles that had been brought into the country.

[25]There were physicians who claimed they would lose their practices. There were others who were deeply distrustful about being able to get their jobs back.

[26]The stressors that soldiers responded to on checklists and talked about in interviews did not appear to affect commitment to task and mission nor were they used to remove people from their units.

Table 10.5

Amount of Worry or Stress Soldiers in Precombat Sample Thought the Following Events Would Cause

Event	Percentage Saying It Caused "Quite a Bit" or "Extreme" Stress
Having a buddy WIA or KIA[a]	
XVIIIth Corps	53.9
VIIth Corps	43.1
Being attacked by enemy aircraft	
XVIIIth Corps	45.0
VIIth Corps	31.2
Being WIA or KIA[a] yourself	
XVIIIth Corps	49.7
VIIth Corps	42.8
Having a company level leader WIA or KIA[a]	
XVIIIth Corps	23.6
VIIth Corps	20.0
Having to kill or wound the enemy	
XVIIIth Corps	9.1
VIIth Corps	8.2
Being attacked by enemy tanks[b]	
XVIIIth Corps	40.6
VIIth Corps	29.4
Not receiving adequate medical care if wounded	
XVIIIth Corps	38.0
VIIth Corps	35.4
Being attacked by enemy artillery	
XVIIIth Corps	49.1
VIIth Corps	36.4
Being attacked by chemical or biological weapons	
XVIIIth Corps	64.4
VIIth Corps	50.5

NOTES: XVIIIth Airborne Corps sample number equals 1,309. VIIth Corps sample number equals 1,544.

[a]Wounded in action or killed in action.

[b]This and some of the other differences between the two corps are probably due to two factors: (1) Two of the divisions of XVIIIth Corps were primarily composed of light infantry as opposed to the heavily armored VIIth Corps and thus quite correctly saw themselves as more vulnerable to certain weapons, and (2) XVIIIth Corps units had been in theater for four to five months when surveyed, while most VIIth Corps units had been in theater for a little over a month.

each team, crew, and squad to survive a dangerous future. This might well include ignoring minor symptoms that would have brought them to medical attention in garrison.

MEASURING STRESS LEVELS

A more objective measure of stress levels is the scale scores on the Derogatis Brief Symptom Inventory (BSI); see Derogatis and Spencer (1982) and Derogatis and Melisaratos (1983). The normal summed score of the BSI—the General Severity Index (GSI)—indicates the level of psychological symptoms being experienced by the respondent.[27] We used a shortened version—the Trauma Scale—Derogatis' shortened scale, which correlates at over 0.9 with the GSI, to indicate symptom levels and change over time. The scale scores of participants in ODS were higher than scores of American troops deployed to Somalia, Haiti, or Bosnia.

The mean Trauma Scale score for the sample from XVIIIth Airborne Corps (N = 1,310) was 0.89 (on a four-point scale), compared with a mean of 0.50 for nondeployed controls and even lower means for civilians. The mean Trauma Scale score for the VIIth Corps sample (N = 1,528) was 0.68, still significantly above the control means. It is most likely that the differences between the two samples were due to the longer time XVIIIth Corps had spent in the theater and that VIIth Corps was a heavy armor/mechanized force and the XVIIIth Corps was a lighter armor force and hence more vulnerable.

An analysis of variance demonstrated that prior to the initiation of hostilities, eight stress factors accounted for 50 percent of the variance in these scores. These were

- work load
- family issues
- leader behavior
- company combat confidence
- personal confidence
- confidence in supporting weapons systems
- concern about enemy weaponry
- general group confidence.

As would be expected from the work done in the past on cohesion and unit climate, we found marked differences between the mean scores for units. These correlate strongly with horizontal and vertical cohesion scores of the units involved. Work done at the Walter Reed Army Institute of Research by Bliese and

[27]While the full BSI was given to the XVIIIth Airborne Corps sample, a shortened version (the Trauma Scale) was in the questionnaire given to VIIth Corps troops.

Halverson (1996 and 1998) has demonstrated that vertical and horizontal cohesion exert a strong effect on the central tendency of unit scores on psychological inventories, such as the BSI. We found these to be correlations equally significant for the units in the Gulf. An array of unit means demonstrates this, as indicated in Table 10.6. We should remember that for an instrument like the BSI, small differences in scores can indicate substantially differing degrees of risk.

The subscale scores in the XVIIIth Corps sample mirror the interview materials, with peaks in the subscales for depression and hostility most marked. This may be of some importance because there is a fair amount of literature[28] that implicates a combination of enduring depression and anger as detrimental to long-term health given their effects on endocrine, neuroendocrine, and immune systems.

Table 10.6

Means on Trauma Scale for Company-Level Units

Company Notional Designators	
A.	1.19
B.	1.11
C.	1.00
D.	.93
E.	.88
F.	.87
G.	.87
H.	.86
I.	.80
J.	.77
K.	.77
L.	.75
M.	.70
N.	.68
O.	.67
P.	.66
Q.	.66
R.	.65
S.	.64
T.	.59
U.	.56

[28]Including the Framingham study.

THE STRESSES OF THE COMBAT PERIOD

The air war brought a new source of chronic stress—continuous apprehension about Scud missiles and the anticipated Iraqi use of chemical warheads. This stress had been building up for months when one evening in December, well before the "air war" began, I was in the field with one division, we saw flashes of light across the sky. While there were no reports of either missiles or gas, there was a great deal of intense, concerned discussion about whether or not to go into military operational protective posture (MOPP) gear. In addition, there was a great deal of concern about the adequacy of MOPP gear to meet the chemical weapons threat.[29] Apprehension about gas warfare and the effectiveness of our countermeasures was most marked among recent arrivals in the theater—those who had been most widely exposed to the full range of assertions being made at home.[30]

We discovered other stressors during our postcombat debriefing interviews. Approximately 800 to 1,000 soldiers were interviewed. It should be remembered that these debriefings were designed to provide general background on soldier experiences. Quantitative data were gathered by questionnaire. As noted, our small-group interviews were carried out with subsets of five combat arms brigades representing four divisions that had been deployed to ODS and that had been assessed prior to the combat phase of the deployment.

One of the main stressors was taking "untried, experimental drugs." In many cases in our postcombat debriefings, soldiers claimed that they were the "guinea pigs" on whom these agents (i.e., pyridostigmine bromide (PB) and vaccines) were being tried to see if they would work.[31] The rumors about PB were much like those noted for Atabrine in World War I—it would produce impotence, chronic illnesses, two-headed babies, etc. They were told that the primary symptoms would be some minor gastrointestinal upsets. But some did not believe that could be true because the drug was deemed "investigational." At the time at which these data were gathered, there was no expressed scientific concern about the consequences of ingestion of pyridostigmine bromide, and no wide-scale qualitative data were gathered about patterns of compliance. Knowledge about the problems of compliance with regimens involving other

[29]Today many people have forgotten the arguments that raged in the media about whether our protective gear was effective and usable. These arguments had created an undercurrent of concern as they were disseminated among the troops.

[30]Some additional credence was given to these doubts by early assertions in the media that the Marines were going to buy British protective gear instead of U.S. MOPP because it was lighter and more effective.

[31]About one-third of the soldiers in my interviews asserted that they did not take PB.

agents in past wars led us to ask questions about whether soldiers had taken PB, and if not, why.

In each group interviewed, between 20 to 30 percent of the soldiers asserted that they had not taken their PB tablets or had ceased after one administration. Soldiers, on average, said that they took PB no more than two to two and a half days total. The first time they took it was the day the air war began because of fear of an immediate retaliatory Scud attack with chemical weapons. The second time most reported taking it was when they crossed the line of departure (LD) going into Iraq and Kuwait. Most reported taking it only during the first day. Some took it the second day, and a few took it for all the days of the ground war. The reasons given for not taking PB were almost universal and may be paraphrased as follows:

- We were told by the medics that this was an experimental drug. That meant it hadn't been used in humans. I wasn't going to be a guinea pig.
- I thought of Agent Orange when they said experimental. None of us knew what the real effects of taking that drug would be.
- People said it would make you impotent and that you would have two-headed babies if you took pyrido. I wasn't going to experiment on myself and my future.
- It was a new drug. No one knows what the results of taking it would be. I wasn't going to put my future at risk, particularly with the risk of impotence and other side-effects.
- I stopped taking it because of the stomach upset.

Combat was perceived as both a stress reliever and as a source of stress. In interviews, soldiers commonly noted that crossing the LD was the greatest stress reliever of the entire deployment, since it meant they were on their way home. Combat was of course also a source of apprehension; counterbalancing the apprehension was a strong sense of obligation. By November and December, knowledge of Iraqi atrocities in Kuwait had spread through the force, and a very strong feeling developed that the troops had a duty to end this kind of murderous behavior.[32]

[32]This, by the way, was in marked contrast to the anger that we heard in September and October in response to statements made in the press that indicated that if we went to war, it would be to keep the price of gasoline down. The typical response to that was the very angry statement made to me by a young sergeant, "I'm an American soldier, I fight for democracy, I fight to keep people free, not for cheap gas!" At the same time, soldiers were aware from various media of the beliefs (that few seemed to remember after the war) of many pundits and commentators that the ground war would produce 200,000 American casualties in 48 hours and that the American military was being sucked into the greatest trap in history; it was also thought that the Iraqi ground forces would fight at least

It is instructive to look at the events that soldiers experienced and their overall assessments of their stressfulness six to nine months following the ground war. Out of almost 13,000 soldiers surveyed in both the United States and Germany after their return from ODS, varying numbers actually experienced given sources of stress. Of those who did experience them, the percentages of soldiers that reported the events as generating "quite a bit" or "extreme" stress are detailed in Table 10.7.

By comparing Table 10.5 and Table 10.7, we can see that a number of the precombat estimates of the stressfulness of various combat events were overestimates. There was a gross underestimate of the level of effect of knowledge of killing the enemy and exposure to enemy dead. The rapidity of the ground war, the lack of inurement to a prolonged combat scenario, and above all the one-sidedness of the combat[33] contributed to this underestimate.[34]

While almost 75 percent of the soldiers in our first postcombat samples claimed to have served in units that fired on the enemy, only 30 percent of soldiers claimed to have fired rounds themselves, and only 21 percent claimed to have been involved in firefights. These modest proportions would seem to indicate a minimum amount of inflation of combat experience. A number of interviewees

Table 10.7

Percentages Claiming Exposure to and High Levels of Stress from Combat-Traumatic Events

Stressor	% Claiming Exposure	% Claiming Exposure to Event Generated Quite a Bit or Extreme Stress
Buddy wounded in action	30.2	34.5
Buddy killed in action	9.2	43.5
Was wounded or injured myself	5.6	21.7
Had a leader killed or wounded in action	4.9	22.4
Had a confirmed enemy kill	16.5	23.8
Saw an enemy soldier killed or wounded	60.0	23.1
Attacked by enemy tanks	18.8	31.7
Attacked by enemy artillery	43.0	35.8

NOTE: Sample number equals 12,815.

as well, if as crudely, as they had fought the Iranians, and would inflict high casualties on the American forces crossing the berm and in the initial penetrations.

[33]Soldiers rapidly became aware of their exceptional leverage over the enemy and his comparative combat ineffectiveness.

[34]In interviews, many expressed great sympathy for their bedraggled, hungry, dehydrated Iraqi prisoners—often deserted by their leaders and left to face an enemy whose skill and technological advantage utterly outclassed them.

in two divisions asserted some embarrassment about receiving the Combat Infantry Badge since they had never exchanged fire with the enemy.[35] Of the respondents, 28 percent reported that they had seen civilians killed or wounded, and 31.7 percent of these reported that this was quite a bit or extremely stressful. This was confirmed in interviews, particularly with soldiers who were aware of the Iraqi slaughter of the Shiites, and it was compounded by their frustration about being unable to do anything about it.

Accidental losses of unit members to mines or "souvenir" hunting were also a source of stress, as were road accidents. There was concern about oil fires and smoke but, initially, it was not marked. After the war ended, the major concerns were about when they could return home and about familial adjustment upon returning home. The smaller subset who had been exposed to significant trauma in combat or immediately afterward was concerned about those actual events and the vividness of their memories of them, but was more concerned about grief for lost friends and their families.

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[35]Another common sentiment was that this "was a war with no bragging rights," given the disparity in skill and effectiveness between the forces.

Chapter Eleven

RETURN FROM THE PERSIAN GULF AND ITS CONSEQUENCES

For most returning soldiers, the initial period following return was one of marked relief from psychological symptoms and stress. This was certainly not universally true—for some, the stresses of life after return (some a consequence of the deployment) displaced those of the Gulf. Table 11.1 compares the levels on the BSI Trauma Scale before combat and six to nine months following the end of the war.

A perhaps more telling demonstration of the overall improvement is seen in the scores of the soldiers whose precombat scores could be compared with their postcombat responses (N = 1,293), seen in Table 11.2.

While the responses to some items changed dramatically, the responses to others changed only moderately. In addition, the pattern of symptom alleviation did not affect everyone. Indeed, a large proportion of the population who experienced certain symptoms before combat was still experiencing them months after return. It was difficult for a number of these people to attribute their symptom presentations to their combat experiences. Table 11.3 shows the comparative breakdowns by BSI items, which may be helpful in understanding the effect of the chronic stresses of the deployment and perhaps life patterns, as opposed to the acute stresses of combat and the combat zone in time of war.

Table 11.1

Comparison of BSI Trauma Scale Levels Before Combat and Six to Nine Months After the End of the War

	Precombat	After Return
XVIIIth Corps	.89	.55
VIIth Corps	.68	.57

NOTES: Sample sizes: Precombat XVIIIth 1,309; postcombat XVIIIth 6,763; precombat VIIth 1,544; postcombat VIIth 6,052.

Table 11.2

Panel Study Mean Trauma Scale Scores

Precombat	.52
Postcombat	.74

NOTE: Sample number equals 1,293.

Table 11.3

Selected Precombat and Postcombat BSI Item Responses to the Question, "How Much Discomfort Did This Problem Cause You During the Past Week?" (in percentages of panel study sample)

Item	None	A Little Bit	Moderate	Quite a Bit	Extreme
Nervousness or shakiness inside					
Precombat	65.1	21.0	8.8	3.5	1.7
Postcombat	73.8	16.9	5.9	2.2	1.3
Reported unpleasant thoughts					
Precombat	41.7	28.4	14.0	9.2	6.7
Postcombat	67.2	17.4	8.1	5.2	2.1
Faintness or dizziness					
Precombat	89.7	5.4	3.4	.7	.7
Postcombat	88.9	7.7	2.6	.3	.5
Loss of sexual interest					
Precombat	70.2	7.6	8.7	5.2	8.3
Postcombat	86.3	7.0	3.4	1.8	1.4
Trouble remembering things					
Precombat	64.6	21.5	7.8	3.4	2.6
Postcombat	63.2	20.2	8.6	5.5	2.5
Feeling easily annoyed or irritated					
Precombat	25.3	27.7	19.7	14.8	12.5
Postcombat	47.5	22.2	11.3	10.9	8.1
Feeling low in energy or slowed down					
Precombat	52.5	26.7	10.8	5.9	4.1
Postcombat	57.2	21.6	10.2	7.5	3.5
Temper outbursts that you could not control					
Precombat	52.0	19.0	12.2	9.8	7.1
Postcombat	69.5	14.7	8.0	3.8	4.1
Feeling blue					
Precombat	40.0	25.5	14.0	10.6	10.0
Postcombat	61.3	18.7	8.3	7.0	4.7
Postcombat	65.7	16.9	7.8	6.5	3.1
Hot or cold spells					
Precombat	85.3	8.2	3.9	.8	1.8
Postcombat	87.1	7.3	3.5	1.4	.7
Numbness or tingling in parts of your body					
Precombat	77.4	11.6	5.3	3.1	2.5
Postcombat	82.4	9.5	3.9	2.5	1.8
Trouble concentrating					
Precombat	61.1	22.0	9.8	4.1	2.9
Postcombat	63.5	20.8	8.3	5.6	1.9

Table 11.3—continued

Item	None	A Little Bit	Moderate	Quite a Bit	Extreme
Feeling weak in parts of your body					
Precombat	71.7	15.0	7.7	3.3	2.3
Postcombat	72.1	15.2	7.6	3.3	1.8
Feeling tense or keyed up					
Precombat	48.9	21.7	13.5	9.0	6.9
Postcombat	61.6	18.0	9.9	6.4	4.1
Sleep that is restless or disturbed					
Precombat	51.4	19.2	10.3	9.7	9.4
Postcombat	65.0	16.7	8.1	5.7	4.5
Feeling so restless you couldn't sit still					
Precombat	72.3	14.6	6.6	3.6	2.9
Postcombat	70.1	14.5	8.0	4.6	2.7

NOTE: Sample number equals 1,273.

It is equally important to point out that a number of symptom categories hardly change at all. This appears to be particularly true for those with somatic and cognitive aspects. Most of those who presented high levels of symptoms in the precombat period presented high levels of like symptoms in the postcombat period.

THE EFFECTS OF TRAUMATIC EXPOSURE TO COMBAT

Those soldiers who were highly symptomatic after combat included a high proportion of those who were highly symptomatic before combat and others whose symptom profiles while low in the precombat period had risen in the postcombat period and who claimed high levels of combat exposure. In general, the more traumatic combat events the soldier was exposed to, the higher his probable score on the Trauma Scale or the Global General Severity Index of the Brief Symptom Inventory. Those events historically and usually classified as highly traumatic include loss of a unit member, exposure to American dead and wounded, perception that one's own life was in imminent danger, exposure to incoming artillery fire, exposure to mines/booby traps, and exposure to enemy and civilian dead.[1] However, factors other than traumatic events or exposure to combat seem to have been involved for the majority of those in the sample who continued to show high levels of symptoms after return.

Once again, it must be pointed out that those who had high BSI scores before combat were most likely to be those with equivalently high scores postcombat. Unfortunately, we have no data for these specific people "at rest" in a state of

[1]The same pattern and the same "J" curve distribution holds for soldiers whose exposure was to less-traumatic, standard-combat events, such as exchanging fire with the enemy.

comparative "normalcy," i.e., dealing only with the routines and stresses of garrison, training, family, and personal life. What can be said, however, is that response to the subacute chronic stresses of the deployment reasonably predicted the response to the acute stresses of the combat period and response to the stresses that followed return home. Exposure to the acute stresses of combat trauma appears to have increased the risk for various symptoms associated with a posttraumatic stress symptom complex and possible risk for PTSD. The more intense responses to the chronic stresses of the deployment predicted, for a significant part of the sample, a higher level of discomfort, expressed in a set of general psychological symptoms (as seen in the BSI). Thus, high response on the BSI to the stresses of the deployment was, in general, followed by high response of the stressfulness of the combat period, and by high responses to the stresses of the return period. This is shown in the data from the panel study cited above. When the population is divided into quartiles based on BSI scores at time 1 (precombat) and time 2 (postcombat), we see that 55 percent of those who were in the highest quartile (most symptomatic) at time 1 are in the highest quartile at time 2. Of those who were in the second highest quartile at time 1, 20 percent are in the highest quartile at time 2. Those who were in the lower quartiles at time 1 and who moved into the highest ones tended to be soldiers who claimed extensive traumatic exposure in combat.

This precombat and postcombat relationship is underlined by the strong relationship that was found between precombat Trauma Scale scores and postcombat reports of traumatic stress symptoms. Based upon the instruments used in the postcombat surveys, a set of algorithms to determine risk for a possible diagnosis of posttraumatic stress disorder was developed.[2]

Eleven and a half percent of the 1,249 individuals for whom we had complete data in the panel study fell into the moderate- or high-risk groups when surveyed in the period 6 to 12 months after combat. Of these soldiers, 57 percent (52 percent of the moderate-risk group, and 69.2 percent of the high-risk group) had scores in the highest quartile of the BSI Trauma Scale before combat. The numerical distributions are shown in Table 11.4.

The percentage of soldiers seen as possibly being at risk for PTSD in the panel study was slightly lower than the percentages generated by the algorithm for the entire sample postcombat.[3] In this cross-sectional view, the most significant

[2]The algorithms were developed by Major Paul Bartone and Charles Hoover, then both of the Department of Military Psychiatry of the Walter Reed Army Institute of Research. They drew on item responses to the BSI, the Horowitz Impact of Events Scale, and the Combat Exposure Scale. The algorithms were designed to indicate individuals who might be at high and moderate risk for such a diagnosis based upon the number and intensity of responses.

[3]XVIIIth Airborne Corps (N = approximately 5,500) and VIIth Corps samples (N = also, approximately 5,500). In the former, 12.1 percent of the population was indicated to be at "moderate risk"

Table 11.4

Precombat Trauma Scale Quartile Placement of Individuals Meeting Criteria of PTSD Risk

Algorithms	Lowest	Second	Third	Highest
Moderate-risk group	5	16	29	55
Highest-risk group	4	2	6	27

correlate of "risk" was the combination of traumatic combat exposure and the intensity of reaction to such exposure. The panel study data indicate that we must be chary about singular assignment of causality and that a preexisting pattern of response to environmental stressors appears to play a significant role in the "illness outcome" equation. This multifactorial view of possible causality and at least partial process control of illness patterns will be discussed in the conclusions of this report.

THE STRESSES OF RETURN FROM THE PERSIAN GULF

Return from an overseas tour, whether from war or from long-term deployment, is not stress- or hassle-free. Those returning from the Gulf, fortunately, were welcomed back as heroes. Thus, they were not subject to the possible additional risk factors that may have resulted from the rejection and hostility that greeted numbers of Vietnam returnees. Additionally, as opposed to Vietnam, the services brought their people home as units rather than as isolated individuals, which ensured a pattern of continuing social support for many.[4]

While it was recommended that all soldiers participate in small-group debriefings after combat and prior to their return, this was not done extensively. The intent had been to deal with any events or emotional issues experienced during the deployment and/or combat that might have possible unsettling sequelae. As with a number of issues, making time and places available for such debriefings was up to unit commanders, particularly at the brigade and battalion level. Many apparently did not attend to it.[5] However, after the Gulf War there were extensive outreach programs about the very real psychosocial problems that

and 3.4 percent at "high risk." In the latter population, 10.4 percent was indicated as at "moderate risk" and 2.5 percent as at "high risk."

[4]This was not the case for all however. Fillers left the units with which they had served in the Gulf immediately upon arrival in either the United States or Germany to return to their original units.

[5]Others, according to material developed in our background interviews, had reportedly invoked the widespread "folk psychological belief" that when people talk about bad things it makes them sick and unhappy. In several cases, division-level senior personnel had actively discouraged their mental health staffs from setting up outreach or intervention programs. This was by no means new. Following Operation Just Cause in Panama, a number of commanders had forbidden active consultation or outreach programs to the units involved. Only those in the Ranger Battalions had programs to deal with the possible sequelae of traumatic combat exposure.

might occur upon reunion with spouse and family. The services had learned from a long history of experience and research that there was a potential dark side in the reestablishment of familial relationships following return from extended deployments. Postreturn block leaves in the Army tended to be too short to reestablish disrupted personal and family relationships. Maintenance of equipment returning from the Gulf was demanding and time-consuming for some. In many cases, training cycles were begun rapidly as leaders attempted to "make up for training time lost in the Gulf" and fulfill the Army's informal but powerful cultural value of "always being immediately ready to go to war."

For some, events that had transpired in the Gulf continued to bring disturbing memories and were sources of ongoing stress. In our interviews with soldiers in XVIIIth Airborne Corps, some soldiers described their return from the Gulf as the equivalent of getting out of prison. A number of these defined a powerful need for freedom and mobility after return and described getting into their cars and driving at high speed for hundreds of miles "just to feel free." A few described heavy drinking in the period immediately after return. Some returned to disintegrating marriages or relationships that quickly dissolved. For most in the active force, however, the issue was simply one of dealing with the ordinary satisfactions and hassles of reintegration. For many, the issue of personal and family time became the most significant stressor following return. A number of mid-level noncommissioned officers (NCOs) presented an image of unit demands and the operational tempo of their organizations following return that drained them of energy, eroded their marriages and relationships with their children, and led them to seriously question whether to stay in the Army.

The threat imposed by the downsizing that began immediately after return from the war was another chronic stressor for members of the active force. To anyone familiar with the professionalization of the services, it was troubling to hear politicians and the media pontificating, in metaphors appropriate to World War II, about bringing our soldiers home to return to civilian life.[6] For most in the active force, including a plurality of first-termers, home was a military post, and the peacetime job was military service. These visions of stability and predictable career paths were now in doubt as wide-scale downsizing began. It was particularly irksome to a number of soldiers that they would be at risk for downsizing annually for a number of years to come.

For most, the immediate lift of return, national approbation, and local fetes and honors elided into normal living. However, in addition to the positive rein-

[6]Such statements were true of the members of the National Guard and the Reserves, who were indeed returning to civilian life—although not to a rapidly expanding manufacturing economy compensating for years of depression and wartime deprivation (as after World War II).

forcements and uplifts of normal living its usual life stresses were compounded by the special stresses of soldiering and the unpredictability of the future.

Knowledge gained after return from Saudi Arabia shows that the percentages of soldiers who distrusted the effectiveness of Army family support and who questioned the Army's orientation to families did not substantially change (as seen in Table 11.5).

This comparative stability of the subset voicing negative assessments is paralleled in pre and postcombat responses about family support operations. In response to questions about: "What is your level of confidence in . . .," the following percentages of the XVIIIth and VIIth Corps samples answering "very low" or "somewhat low" precombat and postcombat to assessments of family support are indicated in Table 11.6.

This lack of change in the proportion of the group that lacks trust in the family support systems provided by their units was paralleled among the subjects in the panel study.[7] Thus, we must conclude that the subset of soldiers voicing distrust about family support over time was a fixed proportion of the force. As with many other phenomena, the command climate of units related strongly to these perceptions.

A modest number of soldiers interviewed seemed truly haunted by events that had transpired in the Gulf. The anguish of a group of senior NCOs who believed that they had inadvertently caused the deaths of some civilian women and children while engaged in an intensive exchange of fire with the enemy was real and palpable a year after the event. These men—tough, experienced soldiers—all wept as they recounted the incident in which they had discovered, after the

Table 11.5

Percentage of Soldiers in XVIIIth Airborne Corps Responding As Very Dissatisfied or Dissatisfied Precombat and Postcombat to Various Questions[a]

	Precombat	Postcombat
The concern your company has for families	24.5	29.5
The respect the Army shows spouses	31.7	29.1
How your spouse would feel if you made the Army a career	35.0	27.0
The kind of family life you can have in the Army	43.8	40.8
The Army as a way of life	39.6	36.1
The effectiveness of the rear detachment in taking care of the needs of the single soldier	41.1	39.4

NOTE: Survey numbers equal 1,309 precombat and 6,763 postcombat.

[a]The five-point scale read "very dissatisfied," "dissatisfied," "not sure," "satisfied," "very satisfied."

[7]The percentage responses are all within a few points of those for the larger groups.

Table 11.6

Assessments of Family Support (percentage responding "very low" or "somewhat low")

	Precombat %	Postcombat %
The effectiveness of your family support group		
XVIIIth	22.6	25.8
VIIth	22.3	26.9
That your family will be taken care of if you are injured or killed		
XVIIIth	22.8	22.1
VIIth	17.1	26.2
That family support groups will help your family if needed		
XVIIIth	22.6	23.0
VIIth	21.4	25.6
That the rear detachment will help your family if needed		
XVIIIth	29.8	31.4
VIIth	29.6	35.4

NOTE: Survey sizes: Precombat XVIIIth 1,309; postcombat XVIIIth 6,763; precombat VIIth 1,544; postcombat VIIth 6,052.

fact, that civilians had been used as a "shield" by Iraqi troops. Others talked of the pain of memorial services for and meeting the families of friends killed in the war. A number, as in our interviews after Panama, talked of their desire to have another child to affirm life and its value and continuity now that they had seen battle and death.

Following our interviewing with XVIIIth Airborne Corps units in the United States, it was decided that we simply could not focus on the stresses of the deployment and the war only if we were to understand responses on the BSI. We had to look at an inventory[8] of intercurrent stress sources and see what role these played in combination with ODS experiences. This appeared to be particularly important for troops stationed in Germany, since the VIIth Corps and many of its units were being disestablished as part of the massive draw down secondary to the end of the threat from the former Soviet Union. Overall, in VIIth Corps units 6 to 12 months after the war, an analysis of variance demonstrated that five stress factors accounted for 38 percent of the variance in the mean score of the General Severity Index of the BSI, and 36 percent in the shorter Trauma Scale. These were, in descending order of significance:

1. Unit/workplace climate
2. ODS-related issues
3. Reassignment and movement

[8]The lead in developing this inventory was originally taken by Major Mark Vaitkus, then stationed in Germany.

4. Downsizing-related issues
5. Family issues.

Two years after return, in a sample drawn from XVIIIth Airborne Corps, an analysis of variance demonstrated that four stress factors accounted for 32 percent of the variance on the Trauma Scale of the BSI. In descending order of significance they were:

1. ODS-related issues
2. Health and financial issues
3. Unit climate
4. Downsizing/future job issues.

Again we see that individual soldiers perceived multiple factors as sources of stress. Notably, approximately 10 percent of these samples attributed the major part of their life stresses to things that happened during ODS—most often to events other than combat. Consideration of the patterns of response to salient items gathered at three different times after the war may be helpful. The first set of data was gathered from VIIth Corps soldiers eight months to one year after the war's end. The second wave was in response to a mail-out survey 18 months after the war's end to all soldiers still on active duty from whom data had been gathered pre and/or postcombat.[9] The final survey consists of data gathered two years after the return of soldiers to the United States. Unfortunately, I cannot at present separate the ODS returnees from the controls, and approximately 37 percent of the sample had not deployed to ODS. However, the overall pattern of response to current possible stressors is not terribly different from those populations of exclusively ODS returnees.[10] Still, the data below must be viewed overall as strongly indicative, rather than definitive.

Tables 11.7–11.9 show the temporal patterns of allocation of sources of stress by life areas. The tables indicate the percentage of soldiers claiming the item as a source of "quite a bit" or "extreme" stress during the "past two weeks."[11]

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[9]The return rate was approximately 30 percent; thus, data may be taken as indicative rather than representative.

[10]The work pressure of further deployment was combined with downsizing and loss of personnel. This unfortunately meant that detailed alignment and fine-grained analysis of the data remain incomplete.

[11]It should be remembered that in each case a large majority of respondents responded "none at all," "a little bit," or "moderate."

Table 11.7

Perceived Sources of Stress After Return

Sources of Stress	% 9 Months Post	% 18 Months Post	% Two Years + Post
The way things are usually done in my unit	41.3	59.4	47.6
Leadership turnover in my unit	12.6	20.6	19.1
My current assignment or military occupational specialty	19.9	29.2	28.5
Turnover and loss of friends in my unit	9.9	13.3	10.8
The first-line supervisor in my unit	11.4	14.1	12.0
My chain of command	15.8	21.4	19.4
Soldiers I work with	8.6	11.7	12.1

NOTE: Survey numbers equal 6,763 for 9 months postcombat; 6,053 for 18 months postcombat, and 5,084 for two years postcombat.

Table 11.8

ODS-Related Sources of Stress (final CONUS survey percentages)[a]

Sources of Stress	% 9 Months Post	% 18 Months Post	% Two Years + Post
My deployment to ODS	15.7	22.9	14.3
Things that happened in combat in Kuwait/Iraq	13.7	23.3	12.9
Changes in my feelings about myself since I got back from ODS	14.7	24.6	16.5
Things I found out about Desert Storm since I returned to my home base	10.5	18.6	14.8
My parents or relatives because of my deployment to ODS	12.6	15.6	12.5
Adapting to life at my home base since I returned from ODS	7.4	14.6	11.4
The long-term outcome of the war with Iraq	9.5	23.0	16.4
My relationship with my wife or girlfriend since I got back from ODS	15.1	23.6	15.2

NOTE: Survey numbers equal 6,763 for 9 months postcombat; 6,053 for 18 months postcombat, and 5,084 for two years postcombat.

[a]Controls who responded "not applicable" were excluded.

Due to the self-selection that characterized the return of the mail-response questionnaire, this population apparently contained a larger proportion of individuals who saw themselves as stressed and unhappy. In response to the following question: "Think about your life over the past two weeks. On the whole how much stress do you think there is in your life right now?" 36 percent of the VIIth Corps sample responded quite a bit or an extreme amount, as did 46.2 percent of those in the mail survey, and 37.1 percent of those in the final CONUS study. More of those that responded to the mail survey claim to have experienced stressful life disruption as a result of participation in ODS. However, only about 15 percent of the other respondent populations claimed significant levels of stress from life changes caused by their deployment. Since these responses were gathered, insofar as possible, from the personnel of entire

Table 11.9

VIIth Corps (mail survey final CONUS)

	% 9 Months Post	% 18 Months Post	% Two Years + Post
Unit issues			
The way things are usually done in my unit	41.3	59.4	47.6
Leadership turnover in my unit	12.6	20.6	19.1
My current assignment or MOS[a]	19.9	29.2	28.5
Turnover and loss of friends in my unit	9.9	13.3	10.8
The first-line supervisor in my unit	11.4	14.1	12.0
My chain of command	15.8	21.4	19.4
Soldiers I work with	8.6	11.7	12.1
Alcohol since I got back from ODS	8.7	10.5	12.4
Feeling confined or trapped since I got back from ODS	12.4	18.7	15.0
Personal sources of stress			
Financial matters	28.5	36.2	32.0
Personal health matters	10.7	13.8	15.4
Personal health of family and friends	21.3	23.8	24.0
My personal future and the meaning of life	28.4	36.6	28.8
Downsizing-related concerns			
Being able to get a civilian job when I exit the service	31.5	42.0	31.0
Getting civilian job skills or additional education	25.9	41.4	38.4
Being able to stay on in the Army because of downsizing and force reduction concerns	21.4	26.6	17.6
My Army career and chances for promotion	28.8	35.8	29.4

NOTE: Survey number equals 2,012.

[a]Military occupational specialty.

battalions present for duty on a given day, this is not inconsequential. The intercurrent life stresses generated by the threats implicit and explicit in the downsizing process contributed to the overall matrix of perceived stressfulness, as did the omnipresent stresses involving unit climate. The perception of the soldiers that they were living with fairly high levels of stress was complemented by their overall self-assessments of the levels of stress that they were experiencing in their daily lives.

To perceive one's life as stressful indicates one level of a possible problem. Another level that may be more distressing to the individual involves the functional consequences of such stressfulness in other life areas. Fewer respondents saw functional effects of their perceived levels of stress in both their personal and professional life areas; in response to, "in the past two weeks the stresses listed above have affected my personal life," 19.2 percent of the VIIth Corps respondents answered "quite a bit" or "extremely," as did 28.5 percent of those responding to the mail survey, and 25 percent of those in the final CONUS survey. There was an even more marked reduction of perceived functional effects on professional performance. In response to "over the past two weeks the stresses listed above have affected my performance in my military job," the per-

centages responding "quite a bit" and "extremely" were 8.4 percent for the VIIth Corps sample, 13.5 percent for the mail survey, and 12.7 percent for the final CONUS study.

The obverse of the issue of perceived life stress is, of course, the individual's perception of the coping abilities that enable him or her to deal with life stresses, mediate their effects, and avoid slipping into a chronic state of distress. The responses to "over the past two weeks how well have you coped with these stresses" help to elucidate the proportion of the population that may either be in a state of chronic distress or that is in danger of slipping into such a state. In the VIIth Corps sample, 9.8 percent of the population felt they were coping somewhat poorly or very poorly, as did 13.6 percent of the mail survey population and 11.4 percent of the final CONUS survey.[12]

From the data presented above, we can, I believe, reasonably estimate that somewhat over 10 percent of the Gulf War returnee active duty population in each data wave had high symptom profiles on the BSI, considered itself to be significantly stressed, and believed they had difficulty coping with that stress. The stresses were compounded by experiences in the Gulf (both in the deployment and combat) and their life experiences since return. It is obvious that for a majority of these people, patterns of stress were processually interacting with a pattern of response to stressful events. This was indicated by the marked tendency of those who responded at high symptom levels precombat to respond similarly postcombat. Another study[13] corroborated these results: Those soldiers with high scale scores on the BSI one year after combat were very likely to be those with high scores two year after combat. There was also a strong correlation between those who had high symptom scores on the BSI and those who considered themselves to be highly stressed and to not cope well with stress.

For a subset of the population, deployment to ODS appears to have represented a "life marker," to which they have attributed changes in the patterns of their lives. The deployment and its consequences were, of course, extraordinarily significant events with exceptional emotional intensity. Such "life markers" tend to become organizing principles for many participants in terms of attributions of causes of change in self and in life. This was an issue we attempted to explore in the final two surveys, one by mail and one of the CONUS based units.[14] The responses divide the population into three categories: those who saw its effects as neutral; those who viewed them as positive; and those who

[12]This survey is composed of soldiers who did (73 percent) and did not (37 percent) serve in ODS.

[13]An unpublished study looking at a second panel of 1,055 soldiers one and then two years after return found that the tendency remained the same.

[14]The CONUS sample contains only those who claimed ODS service.

viewed them as negative. The respondents were asked to rate each category. The results are listed in Table 11.10.

While there was a modest decline in both samples in the percentage of soldiers with perceived negative feelings about themselves right after ODS compared with the present (as well as modest declines in the size of the other negative assessments), one fact remains: Between 10 percent and 15 percent of each sample population feels they bear negative life consequences from their deployment. Background interviewing left me with the strong feeling that these attributions were psychologically real and represented a basic belief that their lives had been negatively altered by their deployment.

Unfortunately, we have no indication of the prevalence and types of physical symptoms of the soldiers who participated in these studies—our primary concern was with psychological sequelae. Two later studies[15] explored somatic symptoms. The results[16] drew upon a limited sample from which data were gathered three or more years after the end of the war. That period was marked

Table 11.10

Perceived Effects of ODS on the Soldier's Life (in percentage)

	Very Negative	Somewhat Negative	No Change	Somewhat Positive	Very Positive
Changes in feelings about myself right after Desert Storm					
Mail	3.4	13.8	22.8	24.5	33.1
CONUS	4.7	9.6	30.3	21.7	33.6
Changes in my feeling about myself today as a result of my Operation Desert Storm experience					
Mail	2.1	11.1	28.3	27.9	28.6
CONUS	3.6	6.9	36.7	24.6	28.0
Effects of Operation Desert Storm on my personal life today					
Mail	5.2	19.0	40.7	20.4	11.6
CONUS	4.9	11.8	48.2	19.2	15.9
Effects of Operation Desert Storm on my military job performance today					
Mail	3.0	9.7	39.2	24.9	19.7
CONUS	4.8	6.5	42.6	23.3	22.7

NOTE: Sample numbers equal 2,012 for the mail survey and 5,084 for the CONUS survey.

[15]Of reservists and a modest number of active duty personnel from Pennsylvania and Hawaii, as well as in another reserve study carried out by Major John Stuart of the Walter Reed Army Institute of Research.

[16]These results appear in a report for the Assistant Secretary of Defense for Health Affairs.

by controversy about possible existence of a physical (and perhaps toxically induced) entity popularly dubbed "Gulf War Disease" or "Gulf War Syndrome." These limited but indicative data sets showed that both reserve and active duty veterans of the Gulf reported, on average, twice as many physical symptoms as those who had not been deployed to ODS or those reservists deployed to Germany or CONUS following their activation (see Marlowe et al., 1994). Like data subsequently gathered in Somalia, Haiti, and Bosnia, as well as in active duty units in the United States and in civilian settings, these data demonstrate a close relationship between the number of physical symptoms reported and the level of psychological symptomology reported. Here, we may face the problem of mutual reinforcing effects. Psychological symptoms and stress can and do generate physical symptoms, and physical problems and illnesses can and do generate psychological problems and sequelae. It may be moot, and it may be impossible to separate the psychological cognitive, physical, and physiological. We may be on safer ground if we view all types of illnesses as mutually reinforcing and amplifying interactive aspects of a single system.

The issue of attribution and the continuation of symptom presentation is further compounded. I have dealt at some length with the neglected issue of possible predisposition or vulnerability to psychophysiological illness. We must also note that, in addition to the clinging stresses of the deployment period and present life stresses, the returned Gulf veteran has lived for some years in a world of cryptic, lurking, and terrible threat. We do not know for how many each bodily ache and pain, each of the normal cognitive lacunae human beings suffer, each of the insults and symptoms common to aging and the life course, each common or well-defined exotic ailment is perceived through the magnifying glass of Gulf War Disease. This itself may have become a chronic contributing stressor. While we cannot be certain that the symptoms suffered by a modest proportion of returnees from the Gulf are not the result of exposure to an unknown and presently undetectable pathogen or a toxic agent precipitating results unlike any hitherto recorded, the scientific evidence appears to be heavily against this. I believe that it may be important to consider a more complex set of scenarios than those put forward by conspiracy theorists, self-interested apostles of "junk science," and antiscience groups that cavalierly dismiss all scientific findings (particularly epidemiological findings) as denials of reality. Some Gulf War veterans are experiencing real pain, and attention must be paid to them and relief found for them. However, an individual's interpretation of the sources of his or her pain may have no scientific or medical validity.

Chapter Twelve

CONCLUSIONS

If the historical examples noted in this report teach us anything it is to approach any issue of postcombat symptoms or illness syndromes with great care. Assumptions grounded in present knowledge and belief may well prove to be false or at best partially true and therefore deceptive. There have been no villains in this report—intelligent human beings have attempted to explain difficult phenomena to the best of their ability. Their ability, as ours, is limited by what we know and what we do not know. As has been indicated, one person's traumatic event may be pleasurable or neutral to another just as one culture's analysis or explanation may appear nonsensical to another. To our sensibilities, the precipitants to the behavioral problems of Ajax or Achilles should have been combat events. But the Greek men of the period saw fit to bring them down with insults to their honor in the form of denied gifts and kudos. The lessons of the past are that we must attend to assumptions about how the world is put together and what is responsible for our behavior.

In equal measure, as we begin to comprehend the open system relationship between body/brain-mind and the events of the world, we are undoubtedly constrained to move away from the simpler view of psychological events driving psychological consequences and symbolic psychosomatic ailments. Thus, we stand at the threshold of the powerful intersection of neurobiology, psychology, society, and culture. It is not surprising that this should be so. The late David McK. Rioch, founder of the Division of Neuropsychiatry at the Walter Reed Army Institute of Research, consistently pointed out to his scientific staff that the biological hierarchy extends from the molecular to the cultural, with constant interaction among all levels. Obviously, in terms of my background, training, and life work with the U.S. Army, I have concentrated on the psychosocial and cultural. But I have tried to point out that they are only two strands in a highly complex picture of the human consideration of health and illness after combat.

The medical sociologist David Mechanic (1997, p. 92) asserted that "health, as people view it, is truly a social concept, reflecting well-being and performance

in age-appropriate roles" (see Tessler and Mechanic, 1978; Wells et al., 1989; and Mechanic and Hansell, 1987). He went on to point out, citing research in this area that "these subjective health assessments are more than an academic curiosity, as reflected in their powerful predictive capacity." Citing the work of Ware (1986) and Idler (1992), Mechanic (1997, p. 92) continued:

> They [subjective health assessments] are the best general predictors of mortality, morbidity, and use of medical services, and are significantly related to objective indicators such as physician assessment and medical record data. . . . Although much about the predictive power of these self-appraisal measures remains unclear, it is apparent that the well-being dimension is an important aspect of the picture. Social and psychological well-being, of course, is substantially linked to psycho-social stressors, coping responses, the quality of social networks and intimacy, and one's sense of mastery.

The complex matrix of this unclear domain, involving multiple interacting factors, interface relationships that, I would assert, combine in varying forms to produce the constellation of illnesses and erosive symptoms that have been termed "Gulf War Illnesses." For many victims and others, it is extremely difficult to accept the existence of a complex multifactorial basis for Gulf War Illnesses. In part, I would postulate, because we are participants in a culture that believes that the universe is founded upon a pattern of "distributive justice." People who have done "good" should be rewarded by not having their health undermined and their lives disrupted by loss of well-being. Therefore, people conclude that such an outcome must be the result of some kind of malignant agent independent of their behavior. Another "silent assumption" involves the widespread reality that psychological components of illness still bear a stigma in our society—a stigma of moral and mental weakness. As the historian of medicine Charles Rosenberg (1997, p. 46) notes:

> "[F]unctional" ills still bear a burden of moral failure, of psychic weakness or even conscious malingering. As a consequence men and women often seek the ironic comfort of a diagnosis based on "objective"—in practice often immunological—criteria.

One might even hypothecate that stigmatization has been increased by public misperception of many of the concepts of biological psychiatry. Such misperceptions may lead to the even more threatening conclusion that to admit the existence of a psychological component in a physical illness means to admit that something "is wrong" with the physical and chemical structure of one's brain.

These "moral" perceptions are strongly supported by general beliefs in our culture about the level of technological expertise that medicine can bring to bear—particularly, the belief that almost anything can be diagnosed and treated once the causal agent is found. This belief, which comes from the infec-

tious disease model of medicine, is strongly keyed to the concept of a single and singular pathogen or toxin that must be found and dealt with. While it is a model that has legitimacy in some medical domains, it does not in others.

For at least a part of our population, these moral perceptions must also be seen in the context of fear of conspiracy and belief that the "government" (and governmental institutions, such as the Department of Defense) deliberately and maliciously experiment upon our service personnel—that the authorities lie when they consider it necessary, have the worst interests of the population at heart, and are, at best, only self-serving and self-protective. In support of this view, it is easy to anachronistically evaluate failed and sometimes destructive medical experiments of the past as if they were conducted with present knowledge rather than with the limited knowledge that informed them years ago. Such views may be strongly reinforced by myths about experiments upon the domestic population with "germ" warfare and unproved vaccines.

The continuing image of the government as enemy and of governmental medicine as an agent of that enemy obviously does little to enhance the trust that can be of such great importance in treatment and in therapeutic success. As we have seen in past wars, belief and trust that military physicians had the best interests of the soldier at heart were considered key contributors to positive outcomes. These beliefs were undoubtedly affected by media reports of these issues. Discussing "alternative medicine," Sampson (1997, p. 195) makes the cogent point that:

> The press amplifies and exacerbates the problem with its attempts at balance. Its ethic is ostensibly to present objective and balanced articles. But in reality, the technique for reporting medical pseudo-science is to find a proponent or satisfied patient, quote that source for two columns and then "balance" that encomium by quoting a skeptical physician or scientist for one or two paragraphs. Of course, the piece concludes with a rebuttal of the skeptics by the original proponent.

Any review of the news stories written following the National Institutes of Health Persian Gulf Workshop in 1994, or testimony given before any governmental or scientific body, shows a dismissive media response to scientific statements about Persian Gulf illnesses. Continually many segments of the media invoked a climate of fear and threat. Given the reality of human suggestibility, it is not surprising that for some, psychological symptoms become more and more erosive and contributed to intensified physiological ones.

Such beliefs and concerns are part of the context through which we should approach the patterns of illness presented by a number of Gulf War veterans. But it is the outer shell only. It defines terms of reference underlining and legitimating a threat to life and happiness from dark and arcane sources. These kinds of

definitions can alter an individual's perception of the symptoms he or she might suffer. Unfortunately, we know too little about this cohort's definition of health and whether it includes as normal phenomena the usual array of symptoms that many others experience almost daily.

The presentation of somatic symptoms is not a rare event, it is a common one. Noted originally in the work of Hollingshead and Redlich (1958) and still true today, wide segments of our society tend to present psychological pain and psychopathology in the form of physical symptoms. More recent data show that both physical and psychological symptoms are reported in a significant relationship with each other.[1]

The phenomenon is much more widespread than some might think. As Kellner (1985, p. 821) noted in his review article, functional somatic symptoms are extremely common; "these symptoms occur in normal persons, are common in psychiatric patients and are not limited to patients with somatoform disorders." He goes on to note that:

> Somatic symptoms are extremely common. About 60% to 80% of a normal population will experience at least one somatic symptom in any given week. A large proportion of patients presenting to physicians and surgeons do not suffer from physical illnesses but from somatic complaint for which no organic cause can be found on routine investigations, the figures ranging from 20% to 84% (Kellner, 1985, p. 822).

The major psychological correlates are depression and/or anxiety. Describing the "somatic attributional style," Robbins and Kirmayer (1991, p. 1041) assert that:

> A somatic attributional style, for example, may contribute to the translation of personal and social problems into physical symptoms consistent with the somatic illness schema. Somatic attributions may focus attention on bodily manifestations of distress and lead to the perception of physical symptoms that, in the absence of such attributions, would have been perceived as emotional in nature or would not have been perceived at all.

A recent World Health Organization study showed a frequency of somatization of psychological symptoms of about 20 percent in 15 centers across the world, indicating the extraordinary commonality of somatization as a presentation in primary-care clinics across a wide variety of cultures. Somatization's seriousness and concern to us, particularly as it may apply to Gulf War veterans, are demonstrated in the following paragraph:

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[1]See Simon and VonKorff, 1991, and the findings in our Pennsylvania-Hawaii Gulf War respondents' survey (Marlowe, 1994).

> The subjective views of somatizing patients either in respect to chronic physical disease or to overall health were negative in every culture. Even though these views were often not in consonance with the views of the treating physicians, they nevertheless indicate that somatization may be associated with excess mortality among its sufferers in most cultures. This inference derives from the evidence that independent of objective medical health status, physical disability, and social-demographic characteristics, negative self perceptions of health predict mortality and quality of life (Gureje et al., 1997, p. 994).

Further understanding of this issue may come from several studies by Barsky. He points out that those who live in fear of illness[2] believed that good health was essentially "symptom free" and saw "normal" symptoms as indicative of disease (Barsky et al., 1993, p. 1085). In another study, Barsky and Klerman (1983, p. 273) note that "hypochondriasis is an issue about which there is a great lack of clarity" because of the emphasis on disease in contemporary medicine rather than illness (regarding the patient's perception of, response to, and presentation of his or her pathology). They suggest that the term hypochondriasis be dropped in favor of a more operational descriptor—"amplifying somatic style," i.e., the process of amplifying the meaning, significance, subjective, and perhaps actual physical intensity of symptoms based upon beliefs about them (see Barsky and Klerman, 1983). In a later study of the process of symptom "amplification" in patients with upper-respiratory infections, Barsky and his collaborators conclude that depression, anxiety, and hostility were all related to this process (Barsky, Goodson, et al., 1988).

These kinds of cognitive processes with probable somato-sensory results are another thread worthy of further investigation. This is particularly so if one considers that, like many illnesses, those pertaining to service in the Gulf have been culturally shaped. Arcane causes, symptoms, effects, and posited outcomes may define a scenario for the worried veteran. Kleinman has studied this aspect of illness extensively and has coined the term "illness narrative" to describe this aspect of behavior. The illness narrative describes the causes of the illness as perceived by the patient. It is most often constructed out of the assertions, metaphors, folklore, causal attributions, and adduced causes common in the patient's culture. Other agents of the narrative's construction may be the media, friends, a varity of presumed authorities, the Internet, and support and self-help groups. The illness narratives that Kleinman and others have analyzed show that it can become an important factor in shaping both the nature and interpretation of symptoms by the patient (See Kleinman, 1988; Kleinman, 1981; and Kleinman and Good, 1985).

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[2]That is, a group of subjects who met DSM III revised criteria—which embodies the diagnostic criteria used in American psychiatry criteria—for hypochondriasis.

A cogent, widespread, and widely shared illness narrative is certainly a characteristic development of those who report themselves as victims of Gulf War illnesses. Common sense tells us that this image of illness may not represent a purely inductive set of conclusions about the nature of symptoms and consequences reached as an individual act by each veteran. We do not know how much of symptom experience, organization, and presentation has been shaped by the widely available "narrative" omnipresent in the culture at large and in the subculture of "Gulf War Syndrome." The rapidity with which an illness narrative may spread, be shared, and be responsible for shared symptoms has been demonstrated in a number of studies of so-called hysterical epidemics in schools and office buildings.[3] This concept has been powerfully developed by Hacking in his analyses of socioculturally defined "niches" of transient mental illnesses (i.e., illness types and behaviors that are found for at most a few decades) and is undoubtedly applicable to psychophysiologically expressed symptoms of stress (see Hacking, 1995 and 1998).

These cultural and psychosocial threads probably represent only one set of the strands woven into the fabric of Gulf War illnesses. At present, no single toxin, pathogen, or combination of such appears responsible for the series of physiological processes that so far remain medically undetectable. We must look at the individual enmeshed in the systems and processes of belief, ideas, anxieties, and fears outlined above.

As Damasio has demonstrated in *Descartes' Error*, the boundary between the external world (its events, pressures, concerns, and stress) and the brain and body has been broken by research in the neurosciences. The concept of anything being "all in the mind" is scientifically and intellectually dead (Damasio, 1994). The effects of external events on the body's systems are pervasive, continual, and apparently capable of generating a wide array of physical changes and complaints. The brain translates events into messages transmitted by peptides and electrical impulses that alter the functions of endocrine, cardiovascular, immune, and organ systems. These discoveries, which have evolved rapidly over the last two decades, have given rise to a series of new disciplines in the neurosciences (see, for example Kandel, Schwartz, and Jessell, 1991), including psychoimmunology and psychoneuroimmunology. They have revised and improved our view of the concept of stress and its short-term and long-term effects on the individual. While some data remain ambiguous and direct causal effect cannot be given to "stress" *per se,* the overall patterns of research findings demonstrate that stress is a contributing factor to

[3]Such studies are staples of most introductory readers in social psychology and need not be reviewed here. Showalter has written about some of the more wide-scale "hysterical" epidemics in her book (Showalter, 1997; see also, Shorter, 1992).

many illnesses and to the maintenance of both somatic and psychological symptoms. I have not reviewed all the extensive literature in these fields, but Martin (1997) represents a reasonable guide to the present state of knowledge. It certainly appears that there are very real consequences for individuals experiencing prolonged subacute chronic stress, which characterized both the Gulf deployment and return home. It is feasible, for example, that the effects of these stresses made some of our soldiers more vulnerable to environmental pathogens, both in the theater and at home, than they would otherwise have been. The symptoms of such insults, nested in the kind of sociocultural setting of beliefs evolving about illness and the Gulf, might well have been subject to amplification, with deleterious somatic consequences. The threads of combat and deployment stress and the wide spectrum of possible responses, as demonstrated throughout history, weaves into the matrix of possible illness causation. Finally, we must revisit the issue that a subset of our population (as well as of the population that was deployed to the Gulf) is (in some ways, not yet understood) vulnerable and predisposed to ultimately injurious responses to the multiple stressors experienced in deployment and combat.

At the present state of our knowledge, I believe that Gulf War illnesses present a complex intertwining of the above factors and, undoubtedly, a number of others that might be adduced. A proportion of these illnesses shares the same roots as those that have affected soldiers throughout history. To be most helpful to veterans, we must deal with this issue of complexity and not simply focus on a hypothecated or "hoped for" singular cause. Occam's razor is often misinterpreted. Occam did not demand the simplistic, singular solution, but rather said that the simplest solution that accounts for the phenomenon is the most acceptable. In the case of combat-related stress, the simplest solution may be multifactorial and complex. Finally we must recognize that the concept of stress itself is plastic and fuzzy. It has a variety of meanings and interpretations and is held responsible for an array of sometimes contradictory consequences. It may well be that, like other diagnostic and causal categories that existed in the past, it will be discarded in the future in favor of a rigorously defined set of contributors to various outcomes. Its very fuzziness and breadth as a concept, however, mean that we must pursue more and more rigorous research to determine "what it is" in measurable, operational terms and what the consequences of those effects are.

BIBLIOGRAPHY

Aiken, L. H., and D. Mechanic, eds., *Applications of Social Science to Clinical Medicine and Social Policy,* Rutgers University Press, New Jersey, 1986.

Alexander, Franz, "Fundamental Concepts of Psychosomatic Research: Psychogenesis, Conversion, Specificity," *Psychosomatic Medicine,* Vol. 5, 1943.

American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM III),* Third Edition, American Psychiatric Association, Washington, D.C., 1980.

American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM III R),* Third Edition Revised, American Psychiatric Association, Washington, D.C., 1987.

American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM IV),* Fourth Edition, American Psychiatric Association, Washington, D.C., 1994.

Anderson, David L., ed., *Facing My Lai,* University of Kansas Press, Lawrence, 1998.

Appel, John W., and Gilbert W. Beebe, "Preventive Psychiatry," *Journal of the American Medical Association,* Vol. 131, August 1946.

Arieti, S., editor in chief, *American Handbook of Psychiatry,* Second Edition, Volume Four: *Organic Disorders and Psychosomatic Medicine,* Basic Books, New York, 1975.

Artiss, Kenneth L., *The Symptom As Communication in Schizophrenia,* Thomas, New York, 1959.

Babington, Anthony, *Shell Shock: A History of the Changing Attitudes to War Neurosis,* Leo Cooper, London, 1997.

Baker, Benjamin, "The Suppression of Malaria," in W. P. Havens, ed., *Internal Medicine in World War II*, Office of the Surgeon General, Department of the Army, Washington, D.C., 1963.

Baker, S. L., "Drug Abuse in the US Army," *Bulletin of the New York Academy of Medicine,* Vol. 27, No. 6, June 1971.

Barker, Pat, *Regeneration,* Dutton, New York, 1992.

Barker, Pat, *The Eye in the Door,* Dutton, New York, 1994.

Barker, Pat, *The Ghost Road,* Dutton, New York, 1996.

Barr, N. I., and L. M. Zunin, "Clarification of the Psychiatrist's Dilemma While in Military Service," *American Journal of Orthopsychiatry,* Vol. 41, 1971.

Barrett, Deidre, ed., *Trauma and Dreams,* Harvard University Press, Cambridge, 1996.

Barsky, A. J., et al., "Hypochondriacal Patients' Beliefs About Good Health," *American Journal of Psychiatry,* Vol. 150, No. 7, July 1993.

Barsky, A. J., J. D. Goodson, et al., "The Amplification of Somatic Symptoms," *Psychosomatic Medicine,* Vol. 50, 1988.

Barsky, A. J., and Gerald L. Klerman, "Overview: Hypochondriasis, Bodily Complaints, and Somatic Styles," *American Journal of Psychiatry,* Vol. 140, No. 3, 1983.

Baur, Susan, *Hypochondria: Woeful Imaginings,* University of California Press, Berkeley, 1988.

Beeson, Paul B., and Walsh McDermott, eds., *Cecil–Loeb Textbook of Medicine,* W. B. Saunders, Philadelphia, 1963.

Benton, G. H., "'War' Neuroses and Allied Conditions in Ex-Service Men," *Journal of the American Medical Association,* Vol. 77, 1921.

Bey, Douglas R., "Change of Command in Combat: A Locus of Stress," *American Journal of Psychiatry,* Vol. 129, 1972.

Binswanger, Otto, "Hystero-somatische Kranksheitserscheinungen bei der Kriegshysterie," *Monatsschrift fur Psychiatrie und Neurologie,* Vol. 38, 1915.

Blanchard, E. B., L. C. Kolb, and T. P. Pallmeyer, "A Psychophysiological Study of Post-traumatic Stress Disorder in Vietnam Veterans," *Psychiatric Quarterly,* Vol. 54, 1982, pp. 220–229.

Blanchard, E. B., L. C. Kolb, and R. J. Gerardi, "Cardiac Response to Relevant Stimuli As an Adjunctive Tool for Diagnosing Post-Traumatic Stress Disorder in Vietnam Veterans," *Behavioral Therapy,* Vol. 17, 1986, pp. 592–606.

Bliese, P., and R. R. Halverson, "Individual and Nomothetic Models of Job Stress: An Examination of Work Hours, Cohesion and Well Being," *Journal of Applied Social Psychology,* Vol. 28, 1996, pp. 563–580.

Bliese, P., and R. R. Halverson, "Group Consensus and Psychological Well Being: A Large Field Study," *Journal of Applied Social Psychology,* Vol. 28, 1998, pp. 535–580.

Boscarino, Joseph, "Diseases Among Men 20 Years After Exposure to Severe Stress: Implications for Clinical Research and Medical Care," *Psychosomatic Medicine,* Vol. 59, No. 6, 1997.

Bourne, Peter, "Military Psychiatry and the Vietnam Experience," *American Journal of Psychiatry,* Vol. 127, October 1970.

Braestrup, Peter, *Big Story,* Westview Press, Boulder, 1977.

Brandt, Allan M., and Paul Rozin, eds., *Morality and Health,* Routledge, New York, 1997.

Breslau, N. and G. C. Davis, "Posttraumatic Stress Disorder: The Etiologic Specificity of Wartime Stressors," *American Journal of Psychiatry,* Vol. 144, No. 5, 1987a, pp. 578–583.

Breslau, N. and G. C. Davis, "Posttraumatic Stress Disorder: The Stressor Criterion," *Journal of Nervous and Mental Disease,* Vol. 175, No. 5, 1987b, pp. 255–264.

Brill, Norman, and Gilbert W. Beebe, "Follow-Up Study of Psychoneuroses: Preliminary Report," *American Journal of Psychiatry,* Vol. 108, December 1951, pp. 417–425.

Brown, G. W., and T. O. Harris, *Social Origins of Depression,* Tavistock, London, 1978.

Brown, G. W., T. O. Harris, and J. Peto, "Life Events and Psychiatric Disorders: The Nature of the Causal Link," *Psychological Medicine,* Vol. 3, 1973, pp. 159–176.

Brown, G. W., F. Sklair, T. O. Harris, and J.L.T. Birley, "Life Events and Psychiatric Disorder: Some Methodological Issues," *Psychological Medicine,* Vol. 3, 1973, pp. 74–87.

Burkett, B. G., and G. Whitley, *Stolen Valor,* Verity Press, Dallas, 1998.

Burkert, Walter, *Greek Religion,* Harvard University Press, Cambridge, 1985.

The Centers for Disease Control Vietnam Experience Study, "Health Status of Vietnam Veterans, I. Psychosocial Characteristics," *Journal of the American Medical Association,* Vol. 259, No. 18, 1988a, pp. 2701–2707.

The Centers for Disease Control Vietnam Experience Study, "Health Status of Vietnam Veterans, II. Physical Health," *Journal of the American Medical Association,* Vol. 259, No. 18, 1988b, pp. 2708–2714.

The Centers for Disease Control Vietnam Experience Study, "Health Status of Vietnam Veterans, III. Reproductive Outcomes and Child Health," *Journal of the American Medical Association,* Vol. 259, No. 18, 1988c, pp. 2715–2719.

Cobb, I. G., " A New Treatment for Neurasthenia," *Medical Press,* April 14, 1915.

Coffman, Edward M., *The War to End All Wars: The American Military Experience in World War I,* University of Wisconsin Press, Madison, 1986.

Coleman, Jules V., "Division Psychiatry in the Southwest Pacific Area," in W. Mullins and A. J. Glass, eds., *The History of Neuropsychiatry in World War II,* Volume II, Government Printing Office, Washington, D.C., 1973.

Contamine, Phillipe, *War in the Middle Ages,* Blackwell, New York, 1986.

Damasio, Antonio, *Descartes' Error,* Avon Books, New York, 1994.

Datel, William E., and Arnold W. Johnson, Jr., *Psychotropic Prescription Medication in Vietnam,* Defense Technical Information Center, Alexandria, 1981.

Davidson, P. (LTG), *Vietnam at War,* Oxford University Press, New York, 1991.

Dean, Eric T., Jr., *Shook over Hell: Posttraumatic Stress, Vietnam, and the Civil War,* Harvard University Press, Cambridge, 1997.

Decoufle, Pierre, Patricia Holmgreen, Coleen Boyle, and Nancy Stroup, "Self-Reported Health Status of Vietnam Veterans in Relation to Perceived Exposure to Herbicides and Combat," *American Journal of Epidemiology,* Vol. 135, No. 2, 1992, pp. 312–323.

Delbruck, Hans, *Warfare in Antiquity, History of the Art of War,* Vol. I, University of Nebraska Press, Lincoln, 1990.

Derogatis, L. R., and N. Melisaratos, "The Brief Symptom Inventory: An Introductory Report," *Psychological Medicine,* Vol. 13, 1983, pp. 595–605.

Derogatis, L. R., and P. M. Spencer, *The Brief Symptom Inventory (BSI): Administration Scoring and Procedures Manual—I,* Clinical Psychometric Research, Baltimore, 1982.

Detienne, Marcel, and Jean Pierre Vernant, *Cunning Intelligence in Greek Culture & Society,* Humanities Press, Inc., New Jersey, 1978.

Douglas, Mary, *Purity and Danger,* Routledge, New York, 1984.

Douglas, Mary, *Risk and Blame,* Routledge, New York, 1994.

Douglas, Mary, and Aaron Wildavsky, *Risk and Culture,* University of California Press, Berkeley, 1982.

Dowling, Jerome, "Psychologic Aspects of the Year in Vietnam," *U.S. Army Vietnam Medical Bulletin,* November 3, 1967.

Dunbar, H. Flanders, *Psychosomatic Diagnosis,* Hoeber, New York, 1943.

Edmendson, S. W., and D. J. Platner, "Psychiatric Referrals from Khe Sanh During Siege," *U.S. Army Vietnam Medical Bulletin,* July/August 1968.

Ellenberger, Henri F., *The Discovery of the Unconscious,* Basic Books, New York, 1970.

Ellis, John, *Eye Deep in Hell: Trench Warfare in W.W.I,* Johns Hopkins University Press, Baltimore, 1984.

Euripides (Arthur S. Way, trans.), *Euripides,* Vol. III, Loeb Classical Library, Harvard University Press, Cambridge, 1971.

Ferguson, Niall, *The Pity of War,* Basic Books, New York, 1999.

Fidaleo, Raymond A., "Marijuana—Social and Clinical Observations," *U.S. Army Vietnam Medical Bulletin,* April 1968.

Figley, Charles, ed., *Stress Disorders Among Vietnam Veterans,* Brunner/Mazel, New York, 1978.

Figley, Charles R., and Seymour Leventman, eds., *Strangers at Home: Vietnam Veterans Since the War,* Praeger, New York, 1980.

Foucalt, Michel, *The Birth of the Clinic, An Archaeology of Medical Perception,* Vintage Books, New York, 1975.

Friedman, J. H., "Military Psychiatry: Limitations of Current Preventive Approach," *Archives of General Psychiatry,* Vol. 26, 1971, pp. 118–123.

Gaupp, R., "Ungewohnliche Formen der Hysterie bei Soldaten," *Psychiatrisch-Neurologische Wochenschrift,* Vol. 17, 1915.

Gelder, Michael, Dennis Gath, and Richard Mayou, *Oxford Textbook of Psychiatry,* Second Edition, Oxford University Press, New York, 1991.

Gilliland, B. E., and Richard K. James, *Crisis Intervention Strategies,* Brooks/Cole, Pacific Grove, 1997.

Ginzberg, E., *The Lost Divisions,* Columbia University Press, New York, 1959.

Glass, A. J., "Lessons Learned," in W. Mullins and A. J. Glass, eds., *The History of Neuropsychiatry in World War II,* Volume II, Government Printing Office, Washington, D.C., 1973.

Grinker, Roy R., and J. P. Spiegel, *Men Under Stress*, Blakiston, Philadelphia, 1945.

Green, Bonnie L., Jacob D. Lindy, and Mary C. Grace, "Posttraumatic Stress Disorder: Toward DSM-IV," *The Journal of Nervous and Mental Disease*, Vol. 173, No. 7, 1985, pp. 406–411.

Gross, Paul R., Norman Levitt, and Martin W. Lewis, eds., *The Flight from Science and Reason*, New York Academy of Sciences, New York, 1997.

Gureje, O., G. E. Simon, et al., "Somatization in Cross Cultural Perspective," *American Journal of Psychiatry*, Vol. 154, No. 7, 1997, pp. 989–995.

Gunderson, E.K. Eric, and Richard H. Rahe, eds., *Life Stress and Illness*, Thomas, Springfield, 1974.

Hacking, Ian, *Rewriting the Soul: Multiple Personality and the Sciences of Memory*, Princeton University Press, Princeton, 1995.

Hacking, Ian, *Mad Travelers: Reflections of the Reality of Transient Mental Illnesses*, University Press of Virginia, Charlottesville, 1998.

Hall, Bert S., *Weapons and Warfare in Renaissance Europe*, Johns Hopkins University Press, Baltimore, 1997.

Hanson, Frederick R., ed., *Combat Psychiatry, Special Supplement, The Bulletin of the U.S. Army Medical Department*, Vol. IX, November 1949.

Hanson, Victor D., *The Western Way of War*, The Free Press, New York, 1989.

Hanson, Victor D., *The Other Greeks*, The Free Press, New York, 1995.

Havens, W. P., ed., *Internal Medicine in World War II*, Office of the Surgeon General, Department of the Army, Washington, D.C., 1963.

Helman, Cecil G., *Culture, Health and Illness*, Third Edition, Butterworth-Heinemann, Oxford, 1994.

Herbert, Anthony B., *Soldier*, Holt, Rinehart and Winston, New York, 1973.

Hess, Earl J. *The Union Soldier in Battle*, University Press of Kansas, Lawrence, 1997.

Hollingshead, A. B., and F. C. Redlich, *Social Class and Mental Illness*, Wiley, New York, 1958.

Hopkins, James E.T., Henry G. Stelling, and Voorhees S. Tracy, "The Marauders and the Microbes," in James H. Stone, ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma in the Second World War*, Office of the Surgeon General, Department of the Army, Washington, D.C., 1969.

Horowitz, M. J., *Stress Response Syndromes*, Aronson, New York, 1976.

Horowitz, M. J., "Stress Response Syndromes and Their Treatment," in L. Goldberger and S. Breznitz, eds., *Handbook of Stress: Theoretical and Clinical Aspects,* The Free Press, New York, 1982, pp. 711–732.

Horowitz, M. J., N. Wiulner, and W. Alvarez, "Impact of Event Scale: A Measure of Subjective Stress," *Psychosomatic Medicine,* Vol. 41, 1979, pp. 209–218.

Huffman, Robert, "Which Soldiers Break Down: A Survey of 610 Psychiatric Patients in Vietnam," *Bulletin of the Menninger Clinic,* Vol. 34, 1970.

Hunter, Richard, and Ida Macalpine, eds., *Three Hundred Years of Psychiatry 1530–1860,* Oxford University Press, London, 1963.

Hurst, Arthur F., "Hysteria in the Light of the Experience of War," *Archives of Neurology and Psychiatry,* Vol. 2, 1919.

Hurst, A. F., and J.L.M. Symns, "The Rapid Cure of Hysterical Symptoms in Soldiers," *The Lancet,* August 3, 1918.

Idler, E., "Self-Assessed Health and Mortality: A Review of Studies," *International Review of Health Psychology,* Vol. 1, 1992.

Ingraham, Larry, "The Nam and the World: Heroin Use by US Army Enlisted Men Serving in Vietnam," *Psychiatry,* Vol. 37, 1974, pp. 114–128.

Isaacs, Arnold, *Vietnam Shadows: The War, Its Ghosts and Its Legacy,* The Johns Hopkins University Press, Baltimore, 1997.

Kandel, Eric R., James H. Schwartz, and Thomas M. Jessell, *Principles of Neural Science,* Third Edition, Appleton & Lange, Norwalk, 1991.

Kardiner, Abram, *The Traumatic Neuroses of War,* P. Hoeber, New York, 1941.

Karnow, Stanley, *Vietnam: A History,* Viking Penguin, New York, 1991.

Kaufman, M. R., "Ill Health As an Expression of Anxiety in a Combat Unit," *Psychosomatic Medicine,* Vol. 9, 1947.

Keane, T. M., J. M. Caddell, and K. L. Taylor, "Mississippi Scale for Combat Related Posttraumatic Stress Disorder: Three Studies in Reliability and Validity," *Journal of Consulting and Clinical Psychology,* Vol. 56, 1988, pp. 85–90.

Kellner, Robert, "Functional Somatic Symptoms and Hypochondriasis: A Survey of Empirical Studies," *Archives of General Psychiatry,* Vol. 42, 1985, pp. 821–833.

Kilpatrick, Ted D., and Harry A. Grater, Jr., "Field Report on Marine Psychiatric Casualties in Vietnam," *Military Medicine,* Vol. 136, October 1971, pp. 801–809.

Kleinman, Arthur, *Patients and Healers in the Context of Culture,* University of California Press, Berkeley, 1981.

Kleinman, Arthur, *The Illness Narratives,* Basic Books, New York, 1988.

Kleinman, Arthur, and Byron Good, *Culture and Depression,* University of California Press, Berkeley, 1985.

Kolb, Lawrence C., "The Psychoneuroses," in Paul B. Beeson and Walsh McDermott, eds., *Cecil–Loeb Textbook of Medicine,* W. B. Saunders, Philadelphia, 1963.

Kulka, R. A., W. E. Schlenger, J. A. Fairbank, R. L. Hough, B. K. Jordan, and C. R. Marmar, *Trauma and the Vietnam War Generation: Report of Findings from the National Vietnam Veterans' Readjustment Study,* Brunner/Mazel, New York, 1990.

Laufer, R. S., E. Frey–Wouters, and M. S. Gallops, "Traumatic Stressors in the Vietnam War and Posttraumatic Stress Disorder," in C. R. Figley, ed., *Trauma And Its Wake,* Vol. I, Brunner/Mazel, New York, 1985.

Leed, Eric J., *No Man's Land: Combat and Identity in World War I,* Cambridge University Press, Cambridge, 1981.

Lewy, Guenter, *America in Vietnam,* Oxford University Press, New York, 1980.

Lewis, Nolan D.C., and Bernice Engel, *Wartime Psychiatry,* Oxford University Press, New York, 1954.

Liddell Hart, B. H., *Great Captains Unveiled,* Little, Brown and Co., Boston, 1927.

Lidz, Theodore, "Psychiatric Casualties from Guadalcanal," *Psychiatry,* Vol. 9, August 1946.

Lifton, Robert J., *Home from the War,* Simon & Schuster, New York, 1973.

Lifton, Robert J., "'Death Imprints' on Youth in Vietnam" *Journal of Clinical Child Psychology,* Summer 1974, pp. 47–49.

Linderman, Gerald F., *Embattled Courage: The Experience of Combat in the American Civil War,* The Free Press, New York, 1987.

Lloyd, G.E.R., *The Revolutions of Wisdom: Studies in the Claims and Practice of Ancient Greek Science,* University of California Press, Berkeley, 1987.

Macdonald, Lyn, *1915, The Death of Innocence,* Henry Holt, New York, 1995.

Marlowe, David. H., *The Galjaal Barsana of Central Somalia,* unpublished doctoral dissertation, Harvard University, 1963a.

Marlowe, David H., "Contract, Commitment, Group Conflict and Boundaries," in J. Masserman, ed., *Science and Psychoanalysis,* Grune and Stratton, New York, 1963b.

Marlowe, David H., ed., *New Manning System Reports 1–5,* Xerox, Division of Neuropsychiatry, WRAIR, various dates, 1984–1989.

Marlowe, David H., "The Human Dimensions of Battle and Combat Breakdown," in R. Gabriel, ed., *Military Psychiatry,* Greenwood Press, Westport, 1986.

Marlowe, David H., et al., "An Assessment of the Psychological and Psychosocial Consequences of Deployment to Desert Storm on Reserve and Active Duty Service Members in Hawaii and Pennsylvania," Annex A of *The General Well-Being of Gulf War Era Service Personnel from the States of Pennsylvania and Hawaii: A Survey,* Walter Reed Army Institute of Research, Washington, D.C., 1994.

Marlowe, Gertrude W., "Cultural Stressors During Deployment: Implications for Women's Health and Performance," in R. J. Ursano and F. H. Gabay, eds., *Sex Differences, Stress, and Military Readiness,* Department of Psychiatry, Uniformed Services University of the Health Sciences, Bethesda, 1996.

Marshall, Grant N., Lois M. Davis, and Cathy D. Sherbourne, *A Review of the Scientific Literature As It Pertains to Gulf War Illnesses,* Volume 4, *Stress,* RAND, Santa Monica, 1999.

Marshall, S.L.A., *Crimsoned Prairie: The Indian Wars,* Scribner, New York, 1972.

Martin, Paul, *The Sickening Mind, Brain, Behavior, Immunity and Disease,* HarperCollins, London, 1997.

Mason, John, "Clinical Psychophysiology: Psychoendocrine Mechanisms," in Silvano Arieti, ed., *American Handbook of Psychiatry,* 2nd edition, Vol. 4, *Organic Disorders and Psychosomatic Medicine,* Basic Books, New York, 1975.

Mason, J. W., E. L. Giller, T. R. Kosten, R. B. Ostroff, and L. Podd, "Urinary Free-Cortisol Levels in Posttraumatic Stress Disorder Patients," *The Journal of Nervous and Mental Disease,* Vol. 174, No. 3, 1986, pp. 145–149.

Masserman, J., ed., *Science and Psychoanalysis,* Grune and Stratton, New York, 1963.

McFarlane, A. C., and G. D. De Girolamo, "The Nature of Traumatic Stressors and the Epidemiology of Post Traumatic Reactions," in Bessel A. van der Kolk, Alexander C. McFarlane, and Lars Weisaeth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society,* The Guilford Press, New York, 1996.

McFeely, William S., *Grant: A Biography,* Norton, New York, 1981.

McPherson, James, *For Cause and Comrades,* Oxford University Press, New York, 1997.

Mechanic, D., "The Social Context of Health and Disease," in Allan M. Brandt and Paul Rozin, eds., *Morality and Health,* Routledge, New York, 1997.

Mechanic, D., and S. Hansell, "Adolescent Competence, Psychological Well Being, and Self-Assessed Physical Health," *Journal of Health and Social Behavior,* Vol. 28, 1987, pp. 364–374.

Moore, Harold G. (LTG Ret.), and Joseph Galloway, *We Were Soldiers Once . . . and Young,* Random House, New York, 1992.

Mora, George, "Recent Psychiatric Developments (Since 1939)" in Silvano Arieti, ed., *American Handbook of Psychiatry,* 2nd edition, Vol. 1, *The Foundations of Psychiatry,* Basic Books, New York, 1974.

Morris, Larry E., M.D., "Over the Hump in Vietnam," *Bulletin of the Menninger Clinic,* Vol. 34, 1970.

Mullins, W., and A. J. Glass, eds., *The History of Neuropsychiatry in World War II,* Volume II, Government Printing Office, Washington, D.C., 1973.

Myers, Charles S., M.D. (Capt. RAMC), "A Contribution to the Study of Shell Shock," *The Lancet,* Vol. i, February 13, 1915, pp. 316–320.

Nace, E. P., A. Meyers, C. P. O'Brien, N. Ream, and J. Mintz, "Depression in Veterans Two Years After Viet Nam," *American Journal of Psychiatry,* Vol. 134, No. 2, 1977, pp. 167–170.

Neel, Spurgeon (MG), *Medical Support of the U.S. Army in Vietnam,* Department of the Army, Washington, D.C., 1973.

Newman, E., D. G. Kaloupek, and T. Keane, "Assessment of Posttraumatic Stress Disorder in Clinical and Research Settings" in Bessel A. van der Kolk, Alexander C. McFarlane, and Lars Weisaeth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society,* The Guilford Press, New York, 1996.

Nowlis, H. H., *Drugs on the College Campus,* Doubleday, New York, 1969.

O'Brien, C. P., E. P. Nace, et al., "Follow-Up of Vietnam Veterans. I. Relapse to Drug Use After Vietnam Service," *Drug and Alcohol Dependence,* Vol. 5, 1980, pp. 333–340.

O'Brien, L. Stephen, *Traumatic Events and Mental Health,* Cambridge University Press, Cambridge, U.K., 1998.

Officer, W. J. (MG), "With Wingate's Chindits" in James H. Stone, ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma During*

the Second World War, Office of the Surgeon General, Department of the Army, Washington, D.C., 1969.

Osler, William, M.D., *The Principles and Practice of Medicine,* D. Appelton and Co., New York, 1892.

Parker, Geoffrey, *The Military Revolution,* Cambridge University Press, Cambridge, 1996.

Palinkas, L. A., and P. Coben, "Psychiatric Casualties Among U.S. Marines in Vietnam," *Military Medicine,* Vol. 153, 1988, pp. 521–526.

Parker, Geoffrey, *The Military Revolution,* Cambridge University Press, Cambridge, 1996.

Parsons, Talcott, *Social Structure and Personality,* The Free Press, London, 1964.

Pettera, R. L., B. M. Johnson, and R. Zimmer, "Psychiatric Management of Combat Reactions with Emphasis on a Reaction Unique to Vietnam," *Military Medicine,* Vol. 134, 1969, pp. 673–678.

Pitman, R. K., S. P. Orr, D. F. Forgue, et al., "Psychophysiological Assessment of Post-Traumatic Stress Disorder Imagery in Vietnam Combat Veterans," *Archives of General Psychiatry,* Vol. 44, 1987, pp. 970–975.

Popper, Karl, *The Logic of Scientific Discovery,* Hutchinson, London, 1959.

Popper, Karl, *Conjectures and Refutations,* Routledge and Paul Keegan, London, 1972.

Porter, Roy, *The Greatest Benefit to Mankind: A Medical History of Humanity,* Norton, New York, 1998.

Ransom, Steven W., "The Normal Battle Reaction," in Frederick R. Hanson, ed., *Combat Psychiatry, Special Supplement, The Bulletin of the U.S. Army Medical Department,* Vol. IX, November 1949.

Raphael, B., J. Wilson, L. Meldrum, and A. C. McFarlane, "Acute Preventive Interventions," in Bessel A. van der Kolk, Alexander C. McFarlane, and Lars Weisaeth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society,* The Guilford Press, New York, 1996.

Raynor, Mortimer W. (MAJ), "Psychiatry at the Front in the American Armies," *State Hospital Quarterly,* Vol. 4, 1918.

Reiser, Morton, "Changing Theoretical Concepts in Psychosomatic Medicine," in Silvano Arieti, ed., *American Handbook of Psychiatry,* 2nd edition, Vol. 4, *Organic Disorders and Psychosomatic Medicine,* Basic Books, New York, 1975.

Reister, Frank A., *Battle Casualties and Medical Statistics: U.S. Army Experience in the Korean War,* Department of the Army, Washington, D.C., undated.

Rivers, W.H.R., "The Repression of War Experience," *The Lancet,* Vol. i, 1918, pp. 72–77.

Rixon, C.H.L., "The Hysterical Perpetuation of Symptoms," *The Lancet,* Vol. i, March 15, 1919, pp. 417–419.

Robbins, James M., and Laurence J. Kirmayer, "Attributions of Common Somatic Symptoms," *Psychological Medicine,* Vol. 21, 1991, pp. 1029–1045.

Robins, Lee N., John E. Helzer, and Darlene Davis, "Narcotic Use in Southeast Asia and Afterward: An Interview Study of 898 Vietnam Returnees," *Archives of General Psychiatry,* Vol. 32, August 1975, pp. 955–961.

Roffman, R. A., and E. Sapol, "Marijuana in Vietnam: A Survey of Use Among Army Enlisted Men in the Two Southern Corps," *International Journal of the Addictions,* Vol. 5, 1970, pp. 1–42.

Rohrbaugh, M., G. Eads, and S. Press, "Effects of the Vietnam Experience on Subsequent Drug Use Among Servicemen," *The International Journal of the Addictions,* Vol. 9, No. 1, 1974, pp. 25–40.

Rosen, George, "Nostalgia: A 'Forgotten' Psychological Disorder," *Psychological Medicine,* Vol. 5, 1975, pp. 340–354.

Rosenberg, Charles, "Banishing Risk," in Allan M. Brandt and Paul Rozin, eds., *Morality and Health,* Routledge, New York, 1997.

Rosner, A. A., "Neuropsychiatric Casualties from Guadalcanal," *American Journal of Medical* Science, No. 207, June 1944.

Sampson, Wallace, "Antiscience Trends in the Rise of the Alternative Medicine Movement," in Paul R. Gross, Norman Levitt, and Martin W. Lewis, eds., *The Flight from Science and Reason,* New York Academy of Sciences, New York, 1997.

Schneider, Robert, "Military Psychiatry in the German Army," in R. Gabriel, ed., *Military Psychiatry,* Greenwood Press, Westport, 1986.

Schnurr, P. P., M. J. Friedman, and S. D. Rosenberg, "Premilitary MMPI Scores As Predictors of Combat-Related PTSD Symptoms," *American Journal of Psychiatry,* Vol. 150, No. 3, 1993, pp. 479–483.

Sears, Stephen W., *Landscape Turned Red: The Battle of Anteater,* Houghton Mifflen, Boston, 1983.

Shatan, C. F., "Soldiers in Mourning," *American Journal of Orthopsychiatry,* Vol. 42, 1972.

Shatan, C. F., "How Do We Turn off the Guilt," *Human Behavior,* Vol. 2, 1973.

Shay, Jonathan, *Achilles in Vietnam,* Simon & Schuster, New York, 1994.

Shorter, Edward, *From Paralysis to Fatigue: A History of Psychosomatic Illness in the Modern Era,* The Free Press, New York, 1992.

Showalter, Elaine, *Hystories,* Columbia University Press, New York, 1997.

Siegel, Rudolph, *Galen on Psychology, Psychopathology and Function and Disease of the Nervous System,* S. Karger, Basel, N.Y., 1973.

Simon, Gregory E., and Michael VonKorff, "Somatization and Psychiatric Disorder in the NIMH Catchment Area Study," *American Journal of Psychiatry,* Vol. 148, No. 11, 1991, pp. 1494–1500.

Slim, Field Marshall Sir William, *Defeat into Victory,* Cassell & Co. Ltd., London, 1956.

Sobel, R., "Anxiety-Depressive Reactions After Prolonged Combat Experience—the "Old Sergeant Syndrome," in Frederick R. Hanson, ed., *Combat Psychiatry, Special Supplement, The Bulletin of the U.S. Army Medical Department,* Vol. IX, November 1949.

Sophocles (Hugh Lloyd-Jones, ed. and trans.), *Ajax, Electra, Oedipus Tyrannus,* The Loeb Classical Library, Harvard University Press, Cambridge, 1994.

Spector, Ronald H., *After Tet,* The Free Press, New York, 1993.

Spiegel, Herbert X., "Preventive Psychiatry with Combat Troops," *American Journal of Psychiatry,* Vol. 101, November 1944.

Stone, James H., ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma During the Second World War,* Office of the Surgeon General, Department of the Army, Washington, D.C., 1969.

Stouffer, Samuel, et al., *The American Soldier,* Volume II: *Combat And Its Aftermath,* Princeton University Press, Princeton, 1949.

Strange, R. E., "Combat Fatigue Versus Pseudo Combat Fatigue," *Military Medicine,* Vol. 133, 1968, pp. 823–826.

Sullivan, Harry S., "Psychiatry and the National Defense," in Harry S. Sullivan, *The Fusion of Psychiatry and Social Science,* Norton, New York, 1964.

Sun-tzu (Samuel B. Griffen, ed. and trans.), *The Art of War,* Oxford University Press, New York, 1963.

Swank, Roy L., "Combat Exhaustion," *Journal of Nervous and Mental Disease,* Vol. 109, June 1949.

Swank, Roy L., and Walter E. Marchand, "Combat Neuroses," *Archives of Neurology and Psychiatry,* Vol. 55, March 1946.

Symonds, C. P., "Some Diseases Which Have Become Common Among Soldiers in This Country," *Guy's Hospital Gazette*, Vol. 30, December 16, 1916, p. 439.

Tessler, R. C., and D. Mechanic, "Psychological Distress and Perceived Health Status," *Journal of Health and Social Behavior*, Vol. 19, 1978, pp. 254–262.

Thayer, Thomas C., ed., *A Systems Analysis View of the Vietnam War*, Vol. 8, *Casualties and Losses*, Defense Technical Information Center, Alexandria, 1978.

Thucydides (Robert B. Strassler, ed.), *History of the Peloponnesian War, The Landmark Thucydides*, The Free Press, New York, 1996.

Tiffany, William J., "The Mental Health of Army Troops in Vietnam," *American Journal of Psychiatry*, Vol. 123, June 1967, pp. 1585–1586.

Ursano, R. J., and F. H. Gabay, eds., *Sex Differences, Stress, and Military Readiness*, Department of Psychiatry, Uniformed Services University of the Health Sciences, Bethesda, 1996.

U.S. Army Medical Department, *The Medical Department of the U.S. Army in the World War*, Vol. IX, *Neuropsychiatry*, U.S. Government Printing Office, Washington, D.C., 1929.

van der Kolk, B. A., *Posttraumatic Stress Disorder: Psychological and Biological Sequelae*, American Psychiatric Press, Washington, D.C., 1984.

van der Kolk, Bessel A., et al., "History of Trauma in Psychiatry," in Bessel A. van der Kolk, Alexander C. McFarlane, and Lars Weisaeth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society*, The Guilford Press, New York, 1996.

van der Kolk, Bessel A., Alexander C. McFarlane, and Lars Weisaeth, eds., *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society*, The Guilford Press, New York, 1996.

Vernant, Jean-Pierre, *Myth and Society in Ancient Greece*, Zone Books, New York, 1990.

Waley, Arthur, *The Book of Songs*, Grove Press, New York, 1996.

Ware, J. E., Jr., "The Assessment of Health Status," in L. H. Aiken and D. Mechanic, eds., *Applications of Social Science to Clinical Medicine and Social Policy*, Rutgers University Press, New Jersey, 1986.

Webster, Richard C., *Why Freud Was Wrong*, Basic Books, New York, 1995.

Wells, K. B., et al., "The Functioning and Well Being of Depressed Patients: Results from the Medical Outcomes Study," *Journal of the American Medical Association*, Vol. 262, 1989, pp. 914–919.

White, William A., M.D., "Mental Disease," in Thomas L. Stedman, M.D., ed., *A Reference Handbook of the Medical* Sciences, Volume 6, Third Edition, W. Wood & Co., New York, 1916.

Whitman, Cedric H., *Sophocles*, Harvard University Press, Cambridge, 1971.

Williams, Tom A., "The Management of Hysteria in War," *Military Surgeon*, Vol. 45, 1919.

Wolff, H. G., "Protective Reaction Patterns and Disease," *Annals of Internal Medicine*, No. 27, 1947.

Wolff, Harold G., *Stress and Disease*, Charles C. Thomas, Springfield, 1953.

Wright, K. M., D. H. Marlowe, J. A. Martin, R. K. Gifford, G. L. Belinky, and F. J. Manning, *Operation Desert Shield Desert Storm: A Summary Report*, Walter Reed Army Institute of Research, Washington, D.C., 1995.

Xenophon (H. G. Dakyns, trans.), *The Education of Cyrus*, J. M. Dent, London, 1992.

Yehuda, R., and A. C. McFarlane, "Conflict Between Current Knowledge About Posttraumatic Stress Disorder and Its Original Conceptual Basis," *American Journal of Psychiatry*, Vol. 152, No. 12, 1995, pp. 1705–1713.

Young, Allan, *The Harmony of Illusions: Inventing Posttraumatic Stress Disorder*, Princeton University Press, Princeton, 1995.