

# War-Related Medically Unexplained Symptoms, Prevalence, and Treatment: Utilizing EMDR Within the Armed Services

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The mental health impact of war is often underestimated by military, government, and media officials who focus primarily on well-known conditions like depression and posttraumatic stress disorder (PTSD) while ignoring the complex toll of modern warfare. These effects are clearly evident in “war syndromes,” many of which can be collectively understood as medically unexplained symptoms (MUS). The current study provides a brief historical review of combat-related MUS as well as an analysis of present evidence of a possible “Iraqi War Syndrome.” An overview of past and current treatments for combat MUS is followed by a single case study treating an Iraqi war combat veteran with combat-related MUS with eye movement desensitization and reprocessing (EMDR). Therapy resulted in significant improvement of the patient’s 1-year psychophysical condition and comorbid PTSD. We provide a detailed account of those treatment sessions as well as a discussion of EMDR’s potential to simultaneously treat a range of combat-related psychophysical conditions without requiring extensive homework or self-disclosure that some military patients may resist. The results are promising, but they require further research.

**Keywords:** medically unexplained symptoms; war syndromes; Operation Iraqi Freedom; combat; EMDR

The mental health impact of war, including the present Global War on Terrorism (GWOT), is routinely underestimated by focusing on well-known neuropsychiatric (NP) conditions like depression and posttraumatic stress disorder (PTSD) while overlooking constellations of physical and neuropsychological complaints without known medical or neurological origin (e.g., Jones & Wessely, 2005). Such “medically unexplained symptoms” (MUS) have also been referred to as “psychosomatic illness,” “somatoform disorders,” “functional somatic symptoms,” “conversion hysteria,” or controversial “war syndromes” (Jones & Wessely, 2005).

When no cause can be identified, the following complaints can be considered to be MUS: chronic fatigue, muscle weakness, sleep difficulties, headache, back pain, pseudo-seizures, diarrhea, muscle aches, joint pain, memory problems, gait disturbance, pseudo-paralyses, constipation, gastrointestinal distress, abdominal pain, facial pain, dysmenorrhea,

sensory loss, dizziness, rapid or irregular heart-beat, skin rashes, persistent shaking, and tremors (Jones & Wessely, 2005). Complicating both understanding and managing MUS in civilian and veteran populations are vague diagnostic labels such as chronic fatigue syndrome (CFS), fibromyalgia, irritable bowel syndrome (IBS), somatoform disorders, and noncardiac chest pain (NCCP). These imply a known pathophysiological cause where none may readily exist; they also create doubts about the authenticity of patient suffering.

In some patients MUS are attributable to a known disease entity; in others, they result from an unrecognized condition involving physiological or immunologic hyperactivity and perceptual hypersensitivity; whereas others may be attributed to psychiatric disorders (Barsky & Borus, 1999); all of which can be caused or exacerbated by cumulative effects of chronic and severe life stressors (Marshall, Davis, & Sherbourne, 2000).

## Brief Historical Overview of War-Related MUS

Since first recorded human warfare in 3000 B.C., war veterans exposed to severe and/or protracted war stressors have experienced diverse patterns of MUS or NP, sometimes referred to as “war syndromes” (Jones, 2006). For example, in 1678 Johannes Hoffer described hundreds of Swiss Army conscripts suffering from “*nostalgia*” or pathological homesickness consisting of diverse psychophysical symptoms and obsessive thinking of home. He wrote that nostalgia sometimes led to death by active or passive suicide and that people of “*all temperaments, weak and strong, are more or less susceptible*” (cited in McCann, 1941, p. 165).

Table 1 reveals the progressive psychophysical toll of modern industrialized warfare’s rapid technological advances in killing capacity and methods. These were introduced during the Napoleonic era with changes in tactics increasingly aimed to inflict psychological and social wounds as much as physical casualties to demoralize and defeat one’s enemy (e.g., chemical-biological weaponry, mass bombing of civilian populations, guerilla tactics, terrorism).

Table 1 indicates that the American Civil War (1861–1865) represented the first major test of human adaptation to modern warfare. This was greatly magnified on a global stage during World War I (1914–1918) resulting in near epidemic numbers of NP and MUS casualties (6,000 Allied “shell shock” cases per month from 1915 Battle of Somme). The result has been cyclical, impassioned, and unresolved “debates” persisting today regarding the etiology, treatment, and compensation of postwar disorders (Russell & Friedberg, 2008a). More recently, the 1990–91 Gulf War resulted in MUS reports by 70,000 of over 500,000 U.S. personnel deployed to the Persian Gulf theater, leading to another controversial syndrome: “Gulf War Illness” (Ozakinci, Hallman, & Kipen, 2006). Stability of MUS in 390 Gulf War vets revealed no significant alteration in number or severity of MUS over a 5-year period (Ozakinci et al., 2006), necessitating early intervention to prevent long-term disability (Iverson, Chalder, & Wessely, 2007).

## General Medical Population and MUS

MUS are not exclusively related to traumatic war stress. Within the civilian population, they result in a high proportion of disability, health care utilization (estimated 47.6 million medical outpatient visits), unnecessary laboratory testing, and increased iatrogenic complication rates, and can be associated with signifi-

cant medical management and financial strain (Department of Veterans Affairs & Department of Defense [DVA/DoD], 2004; Smith et al., 2003). At least 33% of medical complaints are thought to be MUS (Smith et al., 2003). However, although a reported 81% of MUS patients are willing to receive brief psychosocial treatments within primary care settings, only 10% comply with mental health referrals (DVA/DoD, 2004; Smith et al., 2003).

## Early Etiological Concepts of War-Related MUS

In 1678, Hoffer purported holistic neurophysiological causes to “nostalgia,” citing “*the disease is due essentially to a disordered imagination, whereby the part of the brain chiefly affected is that in which the images are located*” (cited in Shalev & Rogel-Fuchs, 1993, p. 413). This preceded modern-day neuroimaging studies, revealing significant associations between psychopathological states (i.e., PTSD) and functional brain changes including memory structures (Lanius et al., 2004) before and after psychotherapy (Frewen, Dozois, & Lanius, in press; Lansing, Amen, Hanks, & Rudy, 2006).

Distinctions between mental and physical illness emerged toward the end of the 18th century via the dominant European philosophy of Cartesian dualism along with medical opinion and impotence in treating so-called “psychological” disorders (Engel, 1977; Kendall, 2001). Subsequently, dualistic concepts of health have forged an impenetrable paradigm in Western medicine, including military medicine, in which “mental” conditions are generally treated as separate and unequal to medical disorders, with the implication that they are less authentic forms of human suffering (Miresco & Kirmayer, 2006; Russell & Friedberg, 2008b).

In 1916, a paradigmatic shift occurred within Western military societies replacing holistic mind–body posttraumatic conceptualizations (i.e., “traumatic neurosis”) of MUS (i.e., “shell shock,” “soldier’s heart”) with the currently favored and socioeconomically more palatable dualistic “hysteria” formulations. These emphasized individual responsibility, predispositions, simulation, and suggestibility as well as blaming the iatrogenic effects of overly indulgent social–medical providers, who were seen as harmfully diagnosing and paying pensions that undercut willpower and resilience (Lerner, 2003; Russell & Friedberg, 2008a). Consequently, psychophysical injuries lacking tangible evidence are often delegitimized—thus reinforcing mental health stigma and rampant disparity (i.e., financial, staffing, research). These effects are seen in repetitive failures to meet wartime

**TABLE 1. Estimated Prevalence of “War Syndromes” From 1854–1945**

| Conflict                       | Country  | NP/MUS Admissions  | Pensions   |
|--------------------------------|----------|--|--|
| Crimean War (1854–1856)        | Russian  | Total: <b>2,561</b><br>-Epilepsy (797)   |  |
|                                | British  | Irritable heart (5,500)<br>Rheumatism (6,482)  | Irritable heart (550)  |
| U.S. Civil War (1861–1865)     | Union    | Acute rheumatism (145,000)<br>Chronic rheumatic (109,000)<br>Mental aches (50,000)<br>Nostalgia (5,200)<br>Functional constipation (150,000)<br>Irritable heart (10,636)<br>Dropsy (2,224) | Chronic diarrhea (55,125)<br>Diseases of heart (25,994)<br>Rheumatism (40,790)<br>Neuralgia (2,144)<br>Epilepsy (1,512)<br>Disease of brain/insanity (1,098)<br>Nervous prostration (5,320)            |
| Boer War (1899–1902)           | British  | Debility (20,767)  | <sup>a</sup> 964 (15%) of sample of 6,276 war pensions found:  |
|                                |          | Rheumatism (24,460)<br>DAH (3,631)   | DAH (199)<br>Functional rheumatism (272)<br>Debility (392)<br>Sunstroke MUS (21)   |
| Russo-Japanese War (1904–1905) | Russian  | Total: <b>15,062</b><br>-Hysteria (6,225)<br>-Epilepsy (1,521)<br>-PNS/paralysis (4,278)<br>-Brain/spinal (43)<br>-Brain disease (396)   |  |
| WWI (1914–1918)                | German   | Total nervous disease: <b>(613,047)</b><br>-Nervous illness<br>-Rheumatism<br>-Cardiac neuroses  |  |
|                                | British  | Shell shock (80,000)<br>DAH (41,699)   | Total <b>149,106</b><br>-DAH/effort syndrome (42,948)<br>-VDH (21,706)<br>-Rheumatism (28,983)<br>-Functional nervous (11,443)<br>-Epilepsy (6,388)<br>-Shell shock (18,596)                           |
|                                | American |  | Total <b>69,394</b><br>-Psychoneurosis (11,443)<br>-Shell shock (63)<br>-Neurocirculatory asthenia (1,737)<br>-Nervous diseases and injuries (6,916)<br>-Epilepsy (6,388)<br>-Endocrinopathies (4,805) |
|                                | Russian  | Total: <b>102,566</b><br>-Nervous illness (81,154)   |  |
| WWII (1939–1945)               | German   | Total: <b>472,250</b>  | Organic psychosis (100,000)  |
|                                | American | Total: <b>1,253,067</b><br>Neurological d/o including<br>Epilepsy (174,000)<br>Psychoneurosis (648,500)<br>Other (64,638)  | Total: <b>604,000</b>  |
|                                | British  | Total: <b>409,887</b>  | Rheumatism (7,943)<br>Heart disease (19,814)<br>Epilepsy (1,766)<br>NP (50,060)  |
|                                | Russian  | Total: <b>1,007,585</b><br>-Contusion injuries<br>-Shell shock (81,000)<br>-Hysteria (45.2%)<br>-Disease nervous system (20%)<br>-Nervous exhaustion (29.5%)<br>-War neurosis (26.6%)      |  |
|                                | Japanese | Total: <b>10,454</b>   |  |

*Note.* It is impossible to estimate actual prevalence of MUS from physical ailments (e.g., rheumatism, epilepsy), therefore the incidence rates above do not reflect actual prevalence or pensioning for NP and MUS. Broad diagnostic classifications like “nervous illness, psychoneurosis, war neurosis, nervous disease” include a wide range of NP and MUS conditions. VDH = Valvular Disorder of Heart. DAH = Disordered Action of Heart.

<sup>a</sup>Cited from Jones & Wessely (2005).

Adapted from Russell, M. C., & Friedberg, F. (2008b).

mental health needs and cyclical debates on the legitimacy of postwar disorders since the 20th century (Russell & Friedberg, 2008a).

## Contemporary Theoretical Explanations of MUS

Subsequently, well-documented associations have been identified between traumatic stress, affect dysregulation, dissociation, and somatization (van der Kolk et al., 1996). Severity of PTSD symptoms is strongly related to cardiovascular problems (Friedman & Schnurr, 1995), IBS (Irwin, Falsetti, Lydiard, & Ballenger, 1996), CFS (Kang, Natelson, Mahan, Lee, & Murphy, 2003), chronic pain (Poundja, Fikretoglu, & Brunet, 2006), somatization (Beckham et al., 1998), altered immune responses of adult survivors of childhood sexual and physical abuse (Aletmus, Dhabhar, & Yang, 2006) and combat veterans (Watson, Muller, Jones, Bradley, 1993).

Underlying explanations or “somatic hypotheses” for MUS have been empirically reviewed (Roelofs & Spinhoven, 2007), including the trauma-dissociation model (Janet, 1907), psychoanalytic “conversion hypothesis” (Breuer & Freud, 1955), cognitive explanations (Brown, 2004; Deary, Chaldler, & Sharpe, 2007; Reif & Broadbent, 2007), and neurobiological models (Heim, Ehler, & Hellhammer, 2000). There is evidence that prevailing cultural and social factors (e.g., politics, media, disability pensions) including medical knowledge of the times can influence symptom presentation and attributions by both patients and doctors alike (Iverson et al., 2007).

## Contemporary Reviews of Scientific Literature on War Stress and Health

A large national scientific review by the Institute of Medicine (2008) on the health effects of chronic stress including war found empirical evidence associating chronic stress as at least a cofactor responsible for acute and long-term pathogenic changes in the (a) endocrine system linked to obesity, insulin resistance, glucose intolerance, (b) immune and inflammatory response systems related to autoimmune and age-related diseases, (c) cardiovascular system contributing to hypertension, atherosclerosis, and coronary heart disease, and (d) gastrointestinal system and brain–gut axis related to functional gastrointestinal disorders like functional dyspepsia and irritable bowel syndrome, providing common linkage to the clustering of somatic symptoms historically referred to as “psychosomatic illness,” medically unexplained symptoms or “war syndromes” (i.e., “irritable heart,” rheumatism, functional constipation, dyspepsia,

effort syndrome). Therefore, stressful life events or other experiential contributors linked to MUS conditions can become treatment targets to reduce psychophysical suffering.

## Prevalence of GWOT-Related MUS: An Iraqi War Syndrome?

Evidence for or against a possible “Iraqi War Syndrome” was analyzed by randomly selecting health assessments of 3,642 United Kingdom veterans deployed to Iraq in 2003. These were compared to records of 4,295 nondeployed counterparts and Gulf War veterans. Horn et al. (2006) examined differences across 50 nonspecific physical symptoms. Five symptoms were significantly greater in the Operation Iraqi Freedom (OIF) deployed cohort (nonrestorative sleep, headaches, sleeping difficulties, fatigue, and irritability, in rank order). In another comparison, Gulf War veterans, deployed in 1990–91, were significantly more likely to experience all 15 of the most common somatic symptoms than their nondeployed counterparts, in contrast to OIF vets (Horn et al., 2006). Unlike Gulf War veterans, OIF vets reported health status as “fair to poor” in similar proportion to nondeployed personnel, suggesting no evidence that OIF deployment was a causative factor (Horn et al., 2006). However, subsequent studies reveal more concerning postdeployment trends.

In 2007, American military epidemiologists reported high frequency of somatic complaints in 2,863 OIF vets, 17% of whom screened positive for PTSD, with over 75% reporting fatigue, 70% sleep difficulties, 42% headaches, 50% joint pain, and 23% gastrointestinal symptoms (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Other troubling trends include elevated incidence of diarrhea (Monteville et al., 2006), with 28% of non-PTSD OIF veterans reporting chronic fatigue and 70% endorsing sleep difficulties (Hoge et al., 2007). In addition, 86% of 283 OIF theater cardiology referrals revealed no organic basis (Sullenberger & Gentlesk, 2008).

While estimates of MUS prevalence in the Department of Defense (DoD) remain elusive, 59,242 or 32% of all GWOT veterans seeking VA health care in 2006 were diagnosed with “Symptoms, Signs, and Ill-Defined Conditions (SSID)” that include MUS (Murphy, 2006), with an unknown number of actual combat MUS. For example, in 1994 a systematic evaluation of 21,579 Gulf War veterans receiving VA care found SSID was the primary diagnosis for 17.2% and secondary diagnosis for another 25% of vets, with 45% of initial SSID diagnoses eventually identified as depression, somatoform disorders, or PTSD (Roy,

Koslowe, Kroenke, & Magruder, 1998). This highlights the importance of treating combat MUS early to prevent chronic disability and the possible creation of another war syndrome.

## Treatment

### Past Treatments for War-Related MUS

In 1862, during the American Civil War (1861–1865), Union Army Surgeon General William Hammond implemented his progressive vision of holistic “unitary mind–body” theory by establishing the first specialty center for researching and treating NP/MUS at Turner’s Lane Hospital in Pennsylvania (Lande, 2003). At Turner’s Lane the first treatment study on combat-related MUS was published by American Union Army physician Jacob Da Costa in 1864. In 1871, Da Costa reported on 200 cases of “irritable heart,” renamed in subsequent wars as “soldier’s heart,” “effort syndrome,” and “disordered actions of the heart” (Lande, 2003). This disorder was characterized by exhaustion from minimal exertion due to military-related activity (i.e., marching, drilling), with reported palpitations, respiration problems, headaches, dizziness, chest pain, and obsessions with imminent heart failure. A soldier’s symptoms would be relieved when removed from units. Although this raised suspicions about cowardice and malingering, many afflicted were battle-tested, experienced soldiers. Da Costa observed a close connection between soldier’s MUS and mental duress of war and noted that diarrhea and fever typically preceded nervous breakdown. Adopting fellow Union Army surgeon S. Weir Mitchell’s “resting cure” method, Da Costa reported 33% were successfully treated and returned to duty. Unfortunately, the major breakthroughs in understanding, studying, and treating combat MUS were abandoned when the war ended.

In 1879, Charcot used hypnosis to treat “traumatic hysteria” with several Franco-Prussian war veterans. His work influenced Janet and Freud’s respective views of causation and treatment. Janet and Freud emphasized the integration of dissociative experiences and abreaction via insight-oriented psychoanalysis (cited in Lerner, 2003). Since World War I, numerous front-line and hospital-based treatments for combat MUS have included hypnosis, abreaction, rest, persuasion, massage, psychoanalysis, sodium-amytal, prolonged sedation, cold baths, ridicule, alcohol, and “faradization” or electrical shock applied to affected limbs—all with limited efficacy (Shepard, 2001).

### Current Treatments of War-Related MUS

In 2001, after 45% of Persian Gulf War veterans developed “Gulf War Illness,” the VHA and DoD published clinical practice guidelines for managing MUS (The Office of Performance and Quality and Quality Management Directorate [VHA/DoD], 2001). The guidelines recommended various cognitive–behavioral therapy (CBT) packages including graded physical exercise for MUS (i.e., CFS). However, the related research studies were all conducted with nonmilitary populations. Subsequently, other reviews have been conducted for treatment of noncombat civilian MUS. While some reviews have concluded that overall CBT treatment effects are “modest at best” (Allen, Escobar, Lerer, Gara, & Woolfolk, 2002), others have proclaimed that CBT methods are generally efficacious. Nevertheless, no single evidence-based protocol has been identified to treat any of the numerous specific MUS (Deary, Chalder, & Sharpe, 2007; Kroenke & Swindle, 2000; Nezu, Maguth Nezu, & Lombardo, 2001; VHA/DoD, 2001).

The CBT protocols reviewed used diverse packaging of techniques including relaxation training, cognitive restructuring, cognitive coping, problem-solving training, assertiveness training, visualization, graded increases in activity level, coping skills training, education, biofeedback, exercise, and changing irrational beliefs in both individual and group formats with duration of treatment ranging from 6 to 14 weeks (Nezu et al., 2001). Kroenke and Swindle (2000) reviewed 31 randomized controlled trials (RCT) of CBT for several MUS ailments in civilian practice, finding a definite advantage for CBT compared to control groups with significant decreases in physical symptoms reported in 71% of studies. However, only 8% of RCT indicated demonstrable improvement on psychological distress, with 26% of RCT showing improved functional status.

A recent RCT on combat MUS by Donta et al. (2003) compared CBT, graded exercise therapy, and combined treatment for 1,092 Gulf War veterans diagnosed with MUS. Only modest outcomes were achieved in any treatment group.

### General Efficacy of EMDR Therapy and MUS

Since 1989, several case studies have reported the potential efficacy of EMDR for MUS such as chronic pain conditions (Grant & Threlfo, 2002; Tinker, Wilson, & Becker, 1997), phantom limb pain from traumatic amputations (Russell, 2008; Schneider, Hofmann, Rost, & Shapiro, 2007; Tinker et al., 1997; Wilensky, 2006),

and chronic sleep and fatigue symptoms (Raboni, Tufik, & Suchecki, 2006). However, no RCT with EMDR and MUS has been undertaken.

## EMDR Therapy and War-Related MUS

EMDR therapy is one of four evidence-based psychotherapies strongly recommended by the Department of Veterans Affairs (DVA) and DoD clinical practice guidelines (DVA/DoD, 2004) and the American Psychiatric Association (APA, 2004) for treatment of traumatic stress. In addition, the potential efficacy of EMDR therapy in treating military-related trauma has been demonstrated in several multiple case studies with active-duty GWOT-era veterans in actual clinic settings versus research laboratories (Russell, 2006, 2008; Russell, Silver, Rogers, & Darnell, 2007; Silver, Rogers, & Russell, in press). Other studies have documented EMDR's successful treatment of PTSD and comorbid phantom limb pain from traumatic leg amputation (Russell, 2008) and Vietnam-related MUS tics (Silver et al., in press) in outpatient military settings.

### Brief Description of EMDR Therapy

Shapiro (2001) describes EMDR therapy as an eight-phase, evidence-based psychotherapy. The first phase gathers client history information including the presenting "target" trauma, past traumatic events (that likely are neurophysiologically linked), and current conditions triggering distress. The second phase educates and prepares clients for treatment. The third phase assesses particular experiences to be targeted, including current representative imagery, negative beliefs, disturbing emotions, associated physical sensations, and an initially desired adaptive or "positive" cognitive belief (e.g., "I'm a survivor"). Phases 4 through 6 are reprocessing phases using standard procedures whereby clients are instructed to maintain a dual focus of attention by concentrating on distressing internal events while tracking external bilateral (left-right) stimuli (e.g., eye movements, touch, or tones). During reprocessing, the client's free associations are typically followed by sets of bilateral stimulation until information is adaptively processed. Successful treatment is characterized by a phase 4 (desensitization) report of emotional distress at a "0 or 1" on the 0-to-10-point (most upset ever) Subjective Units of Disturbance Scale (SUDS; Wolpe, 1982), a phase 5 (installation) procedure, resulting in self-ratings of "6 or 7" on the 7-point (0 = completely false; 7 = completely true) Validity of Cognitions (VoC; Shapiro, 2001) scale, and absence of negative somatic sensations during phase 6 (body scan). The seventh

phase (closure) involves procedures at the end of an incomplete treatment session, with the "re-evaluation" of past, present, and future targets occurring at phase 8 (Shapiro, 2001).

## Clinical Application: Case Study of EMDR Therapy and Combat-Related MUS

### Iraqi War Veteran With Combat-Related Noncardiac Chest Pain

"Jerry" (fictional name) is a 40-year-old male master gunnery sergeant (E-8), explosive ordnance disposal (EOD) specialist with 19 years active-duty service who completed two combat tours in Iraq. Jerry was referred by his primary care physician (PCP) because of refractory multiple MUS including back and knee pain, insomnia, headaches, chronic fatigue, frequent constipation, and chronic irritability. Most prominent was NCCP and palpitations of unknown medical etiology beginning midway through his second Iraq tour. Since returning from Iraq last year he has received extensive medical and cardiac examinations leading to diagnoses and treatment of various "stress-related conditions" such as essential hypertension, hemorrhoids, IBS, unspecified noninfectious gastroenteritis and colitis, diarrhea, and insomnia without noticeable benefit. Moreover, his PCP noted that Jerry adamantly denied any war-related emotional distress or obvious PTSD symptoms on his postdeployment health assessments, as is frequently the case with career-oriented personnel (Hoge et al., 2007).

### Presenting Complaints

Jerry reported multiple health-related concerns after returning from his second Iraq tour 1 year ago without any apparent association to specific traumatic events. He denied intrusive PTSD symptoms but did report an exaggerated startle response (i.e., "feels like my heart was jumping out of my chest when I hear a sudden boom from the airfield"), chronic tension, inability to relax, feeling emotionally numb or detached from his wife, children, and friends, frequently irritable mood (i.e., "yelling at everyone, even my kids for little stuff"), chronic fatigue and difficulties concentrating along with persistent chest pressure and discomfort not helped by medications, relaxation, exercise, and other medical recommendations. This lack of improvement was the only reason he agreed to see "the wizard." Marines often refer to uniformed mental health providers as "wizards" because their patients seem to disappear from (leave) the Corps afterward. Jerry expressed frustration with readjusting to

“normal life” after operational deployments. A common refrain among returned vets is that the routine “busy work we do here means nothing in theater, where the focus is only on the essentials and surviving.” At intake, medications include hydrochlorothiazide, 25 mg a day; magnesium oxide, 400 mg a day; and Ambien, 10 mg at night. Over the previous 12 months Jerry had discontinued trials of Xanax, Zoloft, and Wellbutrin due to ineffectiveness.

## Client History

Jerry denied any traumatic or psychiatric history prior to military service. Combat and operational tours included Iraq (2), Afghanistan, Bosnia, and Somalia and involved numerous traumatic events such as mass graves, seeing and handling dead bodies of people of every age, being a repeated target of bullets or rockets, multiple close calls with “IEDs” (improvised explosive devices), and the deaths of several coworkers. His medical record contained multiple entries for treatment of various physical ailments including recurrent GERD, “GI” (gastrointestinal) distress, headaches, back and knee pain, and sleep problems, but no prior mental health counseling. Jerry admitted to abusing alcohol earlier in his military career; he had stopped drinking for 5 years but resumed after returning from Iraq last year until his wife threatened divorce. At intake, he had been abstinent for the past 11 months.

When asked why he drank heavily after his last Iraq tour but not the first, Jerry hesitated, lowered his head, and his face reddened. Struggling to hold back tears, he turned his head to avoid making eye contact and spoke with a cracked voice, choking back traumatic grief over his “best” friend, “Dan,” who had been killed in an IED ambush. Jerry said he had known “Dan” since explosive ordnance school (EOD), and their children grew up together. The two Marines were jointly deployed in both Iraq tours. During the second deployment, Jerry assumed the head supervisory job as senior ranking of the two and related that it was he who had sent Dan and his EOD team into harm’s way that tragic afternoon. Jerry insisted, however, he did not feel guilty or hold himself accountable for his friend’s death, but he drank in memorial to his fallen brother. He quickly recovered his composure and resumed his matter-of-fact demeanor.

## Assessment

After meeting twice and being given extensive reassurance that identification and treatment for any possible postwar disorder would not automatically

result in medical discharge, Jerry eventually agreed to come clean and reported PTSD symptoms (avoidance and hyperarousal) in the “severe” range on Impact of Events Scale-Revised (IES-R = 72; Weiss & Marmar, 1997). His scores on the Beck Depression Inventory (BDI = 22; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) were at the “moderate” level and were associated with chronic insomnia, fatigue, and irritability. Jerry denied suicidal or homicidal ideation. When asked to rate his self-perception of overall health, with “0” being “the most unhealthy ever in my life” and “10” meaning “most healthy ever in my life,” Jerry sullenly reported a “1.” Treatment options were reviewed and included the use of EMDR. Jerry elected to try EMDR, especially when advised of the limited amount of self-disclosure required, as this ran contrary to the stereotypical “touchy-feely” counseling in which he voiced disinterest.

**First Target Memory.** The “worst” or most upsetting memory was Dan’s traumatic death. Jerry recalled monitoring radio communications of the units (including Dan), which he had ordered to investigate the initial IED mishap. He was listening when the secondary IED detonated. The distressing image of identifying his longtime “brother’s” mutilated body in the morgue was associated with the dispassionate negative cognition (NC) “his body was amazingly intact” due to proximity of explosion. Jerry described a current emotional reaction of “anger” and “guilt” coinciding with heart palpitations and NCCP in his chest, a SUDS of “8,” along with positive cognition (PC) of “I made it back” rated at VoC of “3.” It should be noted that the NC and PC solicited for this and subsequent target memories are not in accordance with standard protocol of “self-referencing” current, irrational and generalizable belief statements (Shapiro, 2001). The author’s experience with EMDR in the military in particular is that after initial attempts to solicit appropriate NC and PC fail, it is best to proceed with what cognitive statements are offered, especially when associated with emotion, as was the case with Jerry.

**Second Target Memory.** While leading a convoy during his first Iraq tour, Jerry’s unit was ambushed by an IED, rocket-propelled grenades, and rifle fire with several explosions and sounds of bullets coming near him and wounding several coworkers. He recalled the smell of rubber burning, NC of “this is it” thinking he and his unit members were going to die. He stated that he currently felt “anger” at the officers who led them into an ambush, physical sensations of general tightness, pain, palpitations in his chest rated as “6 SUDS” along with a PC of “we made it out of there” with VoC of “4.”

**Third Target Memory.** The third memory was of a mass grave scene in Bosnia involving women, elderly, and children. Jerry disclosed an NC of “that was f..d up what they did” and a feeling of “outrage” that was associated with discomfort in his chest and slight headache rated as “6” (SUDS), a PC of “I’m just glad I got out of that place” with VOC of “2.”

**Current Triggers.** Jerry related the following triggers: seeing cars parked along the roadside, any suspicious objects on sidewalk or edge of roads, sudden loud noises, and seeing small children playing, including his daughters, as triggers causing palpitations and NCCP, with SUDS of “7.”

**Future Template.** His desired behavioral state was an ability to remember his fallen “brother,” feeling relaxed when playing with his children, and driving the car without “panicky” feelings rated as VOC “3.”

**Client Preparation.** The therapist discussed the adaptive information processing model, EMDR treatment, patient expectations, and safety plan along with demonstrating mechanics of reprocessing with a light tracking eye scan device. Jerry was taught a deep breathing exercise to cope with stress reactions in between treatment sessions.

### First EMDR Treatment Session (1 Week Later)

Jerry came to the first treatment session appearing fatigued, irritable, and sullen. He reported no change in any of his physical or mental health-related symptoms—rating his overall health status as “0.” He selected the memory of his best friend’s death as initial treatment focus. When asked to notice the image, NC, and sensations he reported SUDS of “10” with a sharp increase of NCCP and palpitations. Jerry was then asked to track the alternating lights while concentrating on this memory but particularly attending to his somatic sensations. After the first set of bilateral stimulation (BLS) using eye movements, he revisited hearing radio transmission that “EOD members were down,” with an increase in chest discomfort, and was asked to “just think of that and notice the feelings in your chest.” Subsequent BLS led to greater detail of the events previously “forgotten” prior to his sending the EOD team out and debriefings by witnesses afterward. During each pause and self-report, Jerry would appear stoic and matter of fact but became physically more restless with facial blushing. He expressed “surprise” over how the “panicky” feelings (palpitations) in his chest increased significantly while he was tracking the light and subsided afterward. Additional BLS resulted in

recalling forgotten details of conversations he had with Dan days and weeks prior that were associated with survivor guilt (“I should have been out there myself”) followed by strings of similar guilt-related associations eventually giving way to fleeting adaptive self-statements, “but I have been out on the wire more than anybody else, including Dan,” followed by further negative associations.

During the reprocessing phases, Jerry was routinely asked to focus his attention on his self-reported associations and especially to concentrate on the somatic sensations while tracking the alternating light. For approximately 30–40 minutes, the string of self-reports was predominantly negative associations to his friend’s death and personal close calls in the ambush. The latter included the incident that Jerry had described as target memory No. 2. He also recalled obscure details of other noncombat memories (e.g., frustrations of camp life), vivid somatosensory descriptions (e.g., sound and heat from explosions, odor of gun powder and corpses), NC (e.g., thinking he was going to die and never see his wife and kids again), and transient PC (e.g., assisting wounded Marines during the ambush). These associations were always accompanied by somatic sensations, especially in his chest and esophageal tract. After following a string of psychophysical associations related to facing his friend’s wife upon returning from Iraq and feeling extreme guilt, Jerry was asked if he could recall any bonding memories of Dan when he was alive. Taken aback by the change in direction, he dutifully replied without conviction, “OK, I’ll try,” but during the BLS Jerry broke out into a smile and chuckled. He described his mind racing to various earlier memories of good times hanging out with Dan, of their mutual love for watching “The Simpsons,” and the laughter and closeness they shared related to events back at EOD school. This more adaptive revelation was followed by increasingly positive recollections with diminished somatic distress.

Toward the end of the hour, the session ended by focusing on a positive memory of his friend. Jerry expressed astonishment over everything he re-experienced during the session, especially the adaptive memories with Dan and how they emerged from recalling his brother’s tragic death. At the end of the session, Jerry stated, “I feel like I was hit by a train,” describing extreme fatigue, but he reluctantly smiled and related surprise that his chest discomfort had “gone down a lot.” Given time demands in an outpatient military setting, the next follow-up appointment was scheduled for 3 weeks later.

## Second EMDR Treatment Session

Jerry related being “wiped out” after the previous session but noticed that he felt “different” over the past weeks. He reported sleeping better but with afternoon fatigue. He was as irritable or “jumpy” and related his wife’s comments about improved demeanor. However, Jerry stated overall health remained low at “2.” When asked to recall the target memory of his friend, he related: “I can still seem him laying there all blown up. . .but it’s not like it used to be.” When directed to notice his chest sensations, Jerry’s facial expression became sullen as he reported, “Oh, it’s still there, and I can feel it growing again. . .the panicky feelings,” at which time he was asked to “just notice that and track the light with your eyes.” The initial BLS focused on the manner of Dan’s death and Jerry’s hypotheses about his last thoughts. Processing led to an increase in general somatic tension and chest discomfort. This was followed by associations to bitterness and anger toward military authorities for changing the “rules of engagement” that protected innocent civilians but heightened risk for EOD personnel.

Within 15–20 minutes of revisiting several past negative war-related associations, Jerry spontaneously recalled older memories of good times with his longstanding friend as well as other close calls he and Dan experienced in Iraq and earlier operational tours. Jerry’s positive associations changed after describing how his and Dan’s children loved to play together during family cookouts, shifting to grotesque scenes of dead bodies of Iraqi women and children killed by indiscriminant IEDs or caught in the crossfire, to witnessing war atrocities in Bosnia and Somalia (e.g., seeing mutilated bodies of children, mass graves) and current associations to his wife and children eliciting profound guilt and sorrow over his emotional detachment. Each disclosure was followed by dividing Jerry’s self-focus onto the self-reported material and the somatic sensations. At the end of the hour, Jerry related a sense of “heaviness” with the PC of how “lucky” he was to be alive to make it up to his children. .

## Third EMDR Treatment Session

Two weeks later, Jerry reported feeling overall “much better” both physically and mentally, giving a health status rating of “5.” After the last meeting, Jerry made a conscious effort to spend more time playing with his children even if he “didn’t feel up to it,” resulting in greater communication with his wife and coworkers. He reported sleeping markedly better with less nighttime awakenings even without the sleep medication (Ambien), which he had discontinued. He was

going to the gym several days each week. Jerry commented his “chest pressure” had gone down noticeably; although it still spiked with sudden loud noises, this was an improvement from spiking with “just about any sudden noise.” Reassessing the first target memory, Jerry reported a SUDS of “3” with “little bit” of “jumpy or panicky” chest sensations. Processing was recommenced, with a particular focus on the somatic symptoms. Associations related to target No. 2 emerged, spurring other combat experiences involving Dan and former EOD coworkers who had been killed in action.

Midway through the session after “looping” or revisiting familiar negative combat and noncombat associations, Jerry was asked to concentrate on the chest discomfort and go back to the earliest memory of noticing it, possibly childhood. Initially stating difficulty, he later recalled a childhood incident during elementary school years where he was punished for improperly supervising his younger brother who had fallen and suffered a minor cut on his head that bled a lot. The early memory was associated with a spike in generalized somatic tension along with the NC “it was my fault”; this was followed by further associations of feeling “scared” and “panicky” when he saw his sibling crying loudly, bleeding. Jerry thought that his brother “was going to die” and was frightened by his parents’ reaction. After another BLS set, Jerry recalled running home, leading his brother by the hand, crying and screaming with the “panicky” feelings in his chest. After a few more sets, Jerry smiled as he recalled his brother eating ice cream after being attended to by his mother while Jerry was sitting on his bed with a sore “behind” from his father attending to him. The relief that his brother was fine and life went back to normal led to further associations of his best friend, Dan, who did not survive his mortal injuries. This again elicited the somatic sensations but at a less intense level.

Toward the end of the session, Jerry reported feeling relaxed with associations primarily of “good memories” when Dan was alive. It seemed the target memory was not becoming more adaptive, so the SUDS was rechecked and reported as “2” with “just a little” of the somatic sensations evident. When asked, “What do you think keeps it from being a 1 or 0?” Jerry replied, “It will never be a 1 or 0 because my best friend died.” He was asked to think about that, and after two consecutive SUDS, it remained a “2.” The PC that “I made it back” was rated as VoC of “6,” followed by a shorter BLS set and another VoC rating of “6.” Asked what would keep it from being a “7,” Jerry replied, “I don’t know. . .I survived and I can be

with my family and feel good about that,” which was maintained at VoC “6.”

#### Fourth EMDR Treatment Session

Jerry reported that his overall outlook and health status continued to improve, including sleeping better (3 nights per week with restorative sleep), more energetic, upbeat mood, and notable decrease in physical symptoms, particularly in his chest, citing “some days I don’t have any (chest discomfort), which has never happened since I got back (from Iraq).” When asked about the other days, Jerry related that he still gets startled by loud noises but that his startle is less intense and of shorter duration. He also admitted that while he feels he has made a great deal of progress, he still finds it hard to stay relaxed at home and enjoy playing with the kids as much as he used to, and that bothered him more than anything right now. Jerry’s overall rating of his health had increased to a “6 1/2.” The initial target memory was reassessed; it remained a SUDS of “2” and VoC of “6,” even after an additional BLS set.

Therefore the focus shifted to target memory No. 2 of the ambush in Iraq that had come up in earlier sessions. Reassessing that memory, Jerry rated his response a SUDS of “1,” adding that “I still remember what happened but it doesn’t bother me like it used to. . . just seems like any other memory now.” When asked about what keeps the SUDS from a “0” Jerry replied, “I could have died and my kids would have been without a father,” which was followed by no change after a BLS set. Jerry’s original PC of “we made it out of there” still fit but with a VoC rating of “7” that was maintained after a BLS set.

With two of the three target memories apparently resolved, the third memory involving witnessing atrocities perpetrated on children was reassessed. This had also been processed in earlier treatment sessions. A SUDS of “3” was given. Processing began with BLS sets, and associations to memories of severely injured or dead children during various deployments including Iraq and Bosnia were elicited. Jerry described feeling “rage” at the “assholes who did it” and disbelief that any adult would harm innocent children. Jerry’s associations went onto the malice and hatred in the world that he had seen firsthand that profoundly violates basic assumptions of human decency. His anguish was visible, and with subsequent BLS his outrage transformed to moral disgust, despair, and profound grief. The sets were intermingled with thoughts about what he would do if someone ever harmed his children. During each of the BLS sets, Jerry was again asked to concentrate on his somatic symptoms.

Jerry’s associations became more adaptive toward the end of the session as he focused on feeling remorse over lost time with his own children and how he planned to make it up. After several more BLS sets, Jerry said he was “drained” but overall felt content with progress he made. A reassessment of target memory (No. 3) revealed SUDS of “2.” Anticipating the therapist’s question of what kept it from progressing lower, Jerry related, “Doc, it will never be anything less than a 2, innocent kids died who shouldn’t have, which is plain wrong.” Asking him to merely “think of that” with a short BLS set revealed no change. He stated that the initial PC of “I’m just glad I got outta that place” still applied and rated as VoC of “6” for the same reasons.

#### Fifth EMDR Treatment Session

Jerry’s self-report indicated continued improvement in restful sleep (average of 5 days a week), energy, mood, and overall health, citing “I haven’t felt as good for years.” He related that he worked out daily and began coaching his son’s little league team. He reported no palpitations or NCCP over the past 2 weeks, with only one episode of being startled when someone slammed a nearby door when his back was turned. Jerry disclosed that he had started watching “The Simpsons” again for the first time since Dan’s death, recalling mostly the “good times” with his “band of brothers.” Jerry’s health status was rated as “6½ to 7.” When asked to choose he picked “6¾,” citing chronic knee pain and occasional chest pressure without pain.

Reassessment of the three previous target memories revealed that all were maintained at respective closing SUDS and VoC, with a “body scan” soliciting no negative somatic sensations. Jerry was asked about current triggers (e.g., riding in car, sudden noises) he earlier rated as SUDS of “2.” Other than loud, sudden noises, he no longer reacted like he used to.

As for the trigger of seeing children including his own, Jerry rated a SUDS of “0,” reporting no difficulties looking at or being around kids, allowing him to coach little league baseball. Jerry reported no difficulty visualizing himself spending time playing with his kids. In regard to EMDR therapy, it was mutually agreed to meet periodically to monitor. Jerry expressed his thanks and confided that his initial reaction to the description of EMDR was “What kind of b.s. is this?” but shortly after experiencing changes during and after EMDR, he was convinced it helped him gain a new perspective of life. Jerry’s PCP expressed positive views of his improved health status.

Figure 1 summarizes progress on baseline measurements administered after this final treatment session, indicating Jerry's self-reported improvement in SUDS, VoC, and health status coincided with marked decreases in symptom measures of PTSD (IES = 10) and depression (BDI = 8), both in the "nonclinical" range.

### 1-, 3-, and 6-Month Follow-Up

As Figures 1 and 2 indicate, at 1-month follow-up Jerry reported sustained improvement in his psychophysical symptoms as well as significant improvement in overall health status, which he rated as "8," with near absence of somatic complaints (NCCP, palpitations, back pain, constipation, GI distress) associated with symptom inventories (IES = 8; BDI = 5). Reassessment of the initial target memory revealed his SUDS was maintained at "2" or "1½" and VoC of "6." Nearly identical self-report was made at 3-month follow-up, although Jerry commented experiencing increased stress related to possible retirement, which occasionally interfered with his sleep and energy to some degree, but "nothing compared to before." His overall health status was rated an "8," a score consistent with symptom inventories (IES = 10; BDI = 9) remaining in the "nonclinical" range. At the 6-month mark, Jerry was on "terminal leave" (remaining on active duty but in leave status until his actual retirement date) and was in very high spirits. Having resolved the major issues of where his family would live and his future vocation, Jerry was upbeat and excited about leaving military service and spending more time with his family. Jerry's optimistic out-

look translated into his health status rating of an "8." This score was limited from being higher because of chronic pain in a surgically repaired knee, but otherwise Jerry reported no somatic or MUS complaints. Baseline symptom surveys were repeated, revealing a general sense of well-being (IES = 4; BDI = 6), and reassessment of initial target memory was unchanged (SUDS = 2; VoC = 6).

### Discussion and Future Direction

Although promising, past and current case studies with EMDR are insufficient to establish efficacy in treating combat MUS. However, they show promise of using a single EBT protocol in treating divergent MUS (e.g., chronic pain, NCCP) and comorbid NP contributors (e.g., PTSD, depression, traumatic grief). The underlying AIP model posits that traumatic experiences are physically stored in memory neural networks resulting in the intrusive thoughts, hyperarousal, and avoidance behaviors of PTSD (Shapiro, 2001). The combination of dual focus attention and BLS is thought to aid the brain's natural information processing system, permitting resolution of unresolved experiences with lessening of emotional disturbance, construction of more adaptive cognitive structures, and elimination of overt symptoms.

### Neuroimaging Studies in MUS and EMDR Therapy

Four separate case studies have been published using neuroimaging scans before and after EMDR treatment for participants with PTSD. These found significant

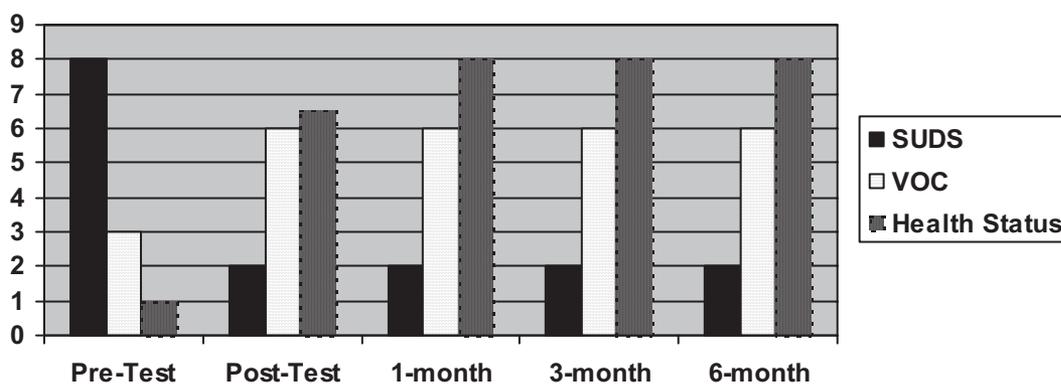
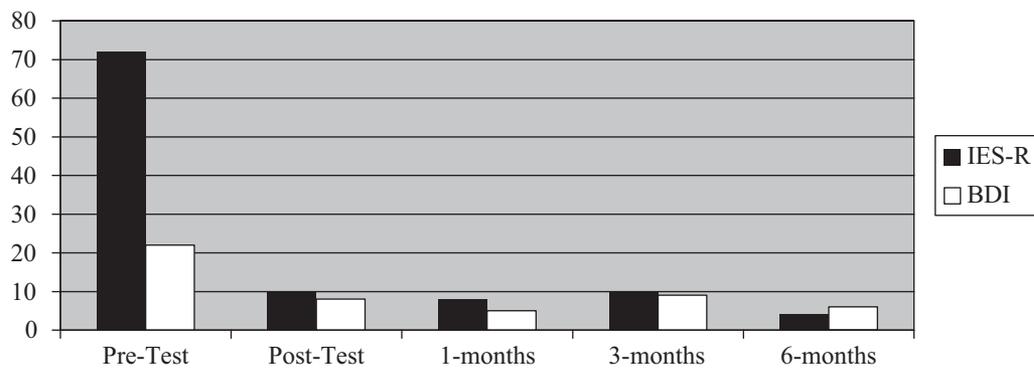


FIGURE 1. Pre/post and 1-, 3-, and 6-month changes on primary target memory.

Note. Changes in self-report measures for emotional disturbance (Subjective Units of Disturbance, SUDS) with "0" = no distress and "10" worst ever. Validity of Cognition (VoC) measuring strength of positive cognition, with "1" = completely false untrue and "7" = completely true. Perceived health status, with "1" = "worst health ever in my life" and "10" = "best health ever in my life," for initial (No. 1) target memory only.



**FIGURE 2.** Pre/post and 1-, 3-, and 6-month follow-up on symptom measures.

*Note.* Pre/post-EMDR treatment effects for PTSD (IES-R) and depression (BDI) symptoms at 1-, 3-, and 6 months posttreatment.

alterations in brain physiology corresponding to improvement on symptom measures (Bossini, Fagiolini, & Castrogiovanni, in press; Lansing, Amen, Hanks, & Rudy, in press; Levin, Lazrove, & van der Kolk, 1999; Oh & Choi, 2007) as well as changes in event-related brain potentials via EEG recordings (Lamprecht et al., 2004), suggesting the utility of a holistic mind-body connection underlying psychotherapies like EMDR.

### Potential Benefit of EMDR Treatment for Military Personnel With MUS

Whether as adjunct or primary treatment, EMDR appears particularly well suited to the needs of military personnel suffering from postwar disorders given its “neuropsychological” therapeutic framework in which psychophysical symptoms are explained in holistic, mind-body terms. This explanatory approach appears to be better received than attributing physical symptoms to predominantly psychological causes that many patients in general, but especially those with MUS, likely resent. Rather than requiring separate therapies for PTSD, depression, traumatic grief, and specific MUS, EMDR represents a single method framed in “face-saving” neuroscientific terms.

Implications of case studies involving EMDR and MUS are considerable. They include potential for (a) simultaneous treatment for a wide range of psychophysical NP and MUS conditions, (b) rapid treatment gains that may prevent premature dropout and conform best to outpatient military settings, (c) destigmatizing psychological treatment by offering a holistic neuroscientific explanatory model, (d) treatment gains without extensive self-disclosure, (e) eliminating need for compliance on homework assignments, and (f) reduced health care costs associated with repeated hospital visits and specialists.

RCTs are required to investigate the efficacy of EMDR in this application. This requires overcoming current scientific resistance toward EMDR therapy (Russell, 2007; Russell & Friedberg, 2008c) by recognizing the overarching or “superordinate” goal of meeting the psychophysical needs of current and future war generations.

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