

Eye Movement Desensitization and Reprocessing International Association Response to the Institute of Medicine Report on “Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Initial Assessment”

October 7, 2012

In response to the Institute of Medicine’s (IOM) July 2012, publication, *Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Initial Assessment*, the Eye Movement Desensitization and Reprocessing International Association (EMDRIA) applauds the IOM for its leadership role in calling for the use of evidence-based methods for treatment of posttraumatic stress disorder (PTSD) and for advocating stepped-up research on therapies for war stress injuries, with an appropriate recognition of the urgency required.

We do, however, see errors and omissions in the portrayal of eye movement desensitization and reprocessing (EMDR) therapy in the IOM reports; we believe that the misrepresentation of EMDR in the 2008 document unfortunately has been perpetuated in the 2012 Initial Assessment. We are concerned that these misunderstandings will be incorporated as Phase 2 of this study proceeds; thus we are providing you with information with the hope that these inaccuracies can be addressed and corrected. This would positively impact further research on the treatment of PTSD. In the following, we have identified several specific statements in the IOM report that misquote or misrepresent the original EMDR research papers. The inaccuracy of the quotes are serious enough to bias the conclusions of the IOM report and call into question the validity of the document.

In addition, we want to highlight the fact that the original IOM report on PTSD called for randomized clinical trials (RCT) to further evaluate EMDR (IOM, 2008), but this recommendation has not been implemented. It is our hope that our response will encourage the IOM to address this lack of follow through and advocate for randomized clinical trials to test the efficacy of *all* the evidence-based therapies.

Omissions, Misinterpretations, and Inaccurate Statements about EMDR

Misrepresentations in the 2012 Initial Assessment’s Summary of the Clinical Guidelines

We are pleased that in the 2012 Initial Assessment IOM acknowledged that “EMDR was given the highest rating in all but one of the guidelines” (IOM 2012, p. 272). In addition to the international and professional guidelines summarized in the Initial Assessment (American Psychiatric Association, International Society for Traumatic Stress Studies, National Health and Medical Research Council, National Institute for Clinical Excellence, Department of Veterans (VA)/Department of Defense (DoD)), several other guidelines have also identified EMDR as having established efficacy in the treatment of PTSD (e.g., Cochrane Database of Systematic Reviews, 2007; Substance Abuse and Mental Health Services Administration, 2010) and as having the same level of efficacy as Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT). While the Australian (NHMRC) guidelines included in the 2102 IOM report gave EMDR a modified “A” rating, those of other countries such as France, Israel, the Netherlands, and Northern Ireland all gave EMDR a full “A” rating but were not mentioned in the 2012 IOM report.

Misrepresentations in Meta-Analyses

A number of meta-analyses have been conducted to evaluate and compare the relative efficacy of treatments for PTSD. These meta-analyses have found no difference in outcome between cognitive behavioral approaches (a category which includes PE and CPT) and EMDR. While these meta-analytic studies are referred to in the Initial Assessment, they are primarily referenced to express support for PE. The meta-analytic finding that EMDR and PE have no differential efficacy is never mentioned in the Initial Assessment. EMDR’s superiority

with a larger treatment effect and less treatment time compared to other treatments, clearly shown in these meta-analyses, also goes unmentioned in the Initial Assessment. This report gives the false impression that PE has undeniable superiority – an erroneous conclusion. For example, this statement from the IOM 2012 report reads “Several meta-analyses of exposure therapy”, when the meta-analyses were actually conducted to compare PTSD treatments. The stated conclusions spotlight PE, but from an objective scientific perspective, all the statements made here about PE should also be applied to EMDR. Here are some examples from the 2012 IOM report which omits important information about EMDR’s effectiveness:

The 2012 Initial Assessment incorrectly states (p. 236):

“Several meta-analyses of exposure therapy (e.g., Bradley et al., 2005) have found that it (exposure therapy) is far more effective than WL (wait list) or supportive therapy and as effective as SSRIs in the short-term with lower dropout rates, but data on long-term effects are sparse (Van Etten and Taylor, 1998).”

This author’s original statement reads (changes in italics):

“Several meta-analyses of *psychotherapies for PTSD* (e.g., Bradley et al., 2005) have found that *EMDR and trauma-based cognitive behaviour therapy are equivalent in effects and that they are* far more effective than WL or supportive therapy, and as effective as SSRIs in the short-term with lower dropout rates, but data on long-term effects are sparse (Van Etten and Taylor, 1998).”

The 2012 Initial Assessment incorrectly states (p. 236):

“Other meta-analyses have shown that exposure therapy is more effective than “non–trauma-focused” treatments or WL in reducing PTSD symptoms, but the differences in outcomes among the different exposure therapies was not significant (Bisson and Andrew, 2007; Seidler and Wagner, 2006).”

The author’s original statement actually reads (changes in italics):

“Other meta-analyses have shown that *trauma-based cognitive behaviour therapy and EMDR are* more effective than “non–trauma-focused” treatments or WL in reducing PTSD symptoms, and that *there was “no evidence of a difference in efficacy between trauma-based cognitive behaviour therapy and EMDR”* (Bisson et al., 2007, p.97). Seidler and Wagner (2006) *conducted a meta-analysis of the 8 studies which directly compared cognitive behavioral approaches and EMDR for adult participants with PTSD and found that “trauma-focused CBT and EMDR tend to be equally efficacious”* (p. 1515).”

Errors and Omissions Related to the Efficacy of EMDR

In the 2008 IOM report, EMDR therapy was evaluated as having inadequate evidence of its efficacy as a PTSD treatment. Summarizing this determination, the 2012 Initial Assessment states (p. 239): “An IOM committee that critically assessed four RCTs for EMDR concluded that the evidence was inadequate to determine its efficacy for the treatment of PTSD (IOM, 2008)”. The accuracy of IOM’s conclusion in 2008 was, in our opinion, questionable. We are concerned that these errors will be incorporated as Phase 2 of this study proceeds and request that the evidence regarding the efficacy of EMDR be reevaluated.

In 2009, Lee and Schubert discussed the report and identified several concerns about the 2008 report’s evaluation of EMDR therapy. They asserted that the errors fall in three areas: “First, the findings of key studies that reported positive outcomes for EMDR were misrepresented; second, a number of positive studies were excluded without apparent justification; and, finally, the IOM report failed to consider additional readily available studies that also reported benefits for EMDR.” (Lee & Schubert, 2009, p. 32).

It appears that the 2012 Initial Assessment simply accepted the conclusion of the 2008 study committee, even though the IOM's conclusions contradicted the findings of all meta-analyses conducted on PTSD treatments (listed above) and several studies that have been published in the intervening years. The study committee's determination also contradicted those of domestic and international scientific expert panels both before (American Psychiatric Association, 2004; Cochrane Database of Systematic Reviews, 2007; Department of Veterans' Affairs/Department of Defense Clinical Practice Guidelines, 2004; International Society for Traumatic Stress Studies, 2000; National Council for Mental Health, 2002; National Institute for Health and Clinical Excellence, 2005) and after IOM's 2008 report (Cook et al, 2008; International Society for Traumatic Stress Studies, 2009; Substance Abuse and Mental Health Services Administration, 2010; VA/DoD Clinical Practice Guidelines, 2010).

In the following section we list a number of errors in the 2008 and 2012 reports as an illustration of the extent of the misrepresentation of EMDR. You will note that we do not interpret the study results, but provide you with direct quotations from the IOM report and direct quotations from the studies themselves summarizing their own findings.

The 2012 Initial Assessment incorrectly stated:

The Rothbaum et al. (2005) study, "*found that in a 6 month follow up a significantly larger fraction of patients who received PE were responders than of those who received EMDR*". (IOM, 2012, p. 238).

Instead the Rothbaum et al. study reported:

"*PE and EMDR did not differ significantly for change from baseline to either post treatment or six-month follow-up measurement for any quantitative scale*" (Rothbaum et al., 2005, p. 607).

The 2012 Initial Assessment incorrectly stated:

"Lee et al. (2002) found that its results were equivalent to those of CBT." (p. 238)

Instead the Lee et al. study reported:

"On global PTSD measures, there were no significant differences between the treatments at the end of therapy. However on the subscale measures of the degree of intrusion symptoms, EMDR did significantly better than Stress Inoculation Training with Prolonged Exposure. At follow-up EMDR was found to lead to greater gains, on all measures." (Lee et al., 2002, p. 1071).

The 2012 Initial Assessment incorrectly stated:

"Several studies (e.g., Davidson and Parker, 2001; Spates et al., 2009) have examined the relative contribution of the eye-movement component and found no effects of its efficacy." (IOM, 2012, p. 238-239)

Instead, in their meta-analysis, Davidson and Parker reported:

"The present data show that the EMDR-EFixDR (EMDR-with-eye-movements compared to EMDR-with-fixed-eyes) effect size is marginally significant if one examines only clinical populations satisfying *Diagnostic and Statistical Manual of Mental Disorders* (i.e., *DSM-III*, American Psychiatric Association APA, 1980; *DSM-III-R*, APA, 1987; *DSM-IV*, APA, 1994) diagnostic criteria." (Davidson & Parker, 2001, p. 311).

Also it is important to note that Spates et al. is a review article, not a study.

It is noteworthy that many of the studies neglected or rejected in the IOM (2008) report were studies that directly compared EMDR and exposure therapies and found the two treatments to be relatively equivalent (e.g., Ironson et al., 2002.; Lee et al., 2002; Taylor et al., 2003; Vaughan et al., 1994). We discuss EMDR research that was neglected in the IOM reports in more detail below:

The 2008 IOM Report incorrectly stated:

“The study by Carlson and colleagues was a small trial in male veterans and it showed no effect post-treatment” (IOM, 2008, p. 99).

Instead, the Carlson et al. study with 35 veterans actually reported: “Compared with the other conditions, significant treatment effects in the EMDR condition were obtained at posttreatment on a number of self-report, psychometric, and standardized interview measures. Relative to the other treatment group, these effects were generally maintained at 3-month follow-up” (Carlson et al., 1998, p. 3).

The 2008 IOM Report incorrectly stated:

“The study by van der Kolk and colleagues was an RCT comparing EMDR, fluoxetine, and placebo, and failed to show significant improvement” (IOM, 2008, pp. 99, 112).

Instead, the van der Kolk et al. study actually reported:

“In the completer analyses, EMDR was significantly superior to placebo on reduction of PTSD symptoms, and showed a greater percentage of loss of diagnostic status as compared to placebo. ... At 6-month follow-up, EMDR was superior to fluoxetine on sustained reduction of posttraumatic symptoms for both ITF (LOCF) and completer analyses.” (van der Kolk et al., 2007, p. 41).

The 2008 IOM Report incorrectly stated:

“The committee also identified two RCTs comparing EMDR with a coping skills training therapy, namely, applied muscle relaxation and relaxation training (Taylor et al., 2003; Vaughan et al., 1994). (IOM, 2008, p. 112).

Instead, the Taylor et al. study actually compared “prolonged exposure, relaxation training, (and) eye movement desensitization and reprocessing” (Taylor et al., 2003, p. 330).

And the Vaughan et al. study compared “imaginal exposure (image habituation training - IHT), or applied muscle relaxation (AMR) or eye movement desensitization (EMD)” (Vaughan et al., 1994, p. 283).

The 2008 IOM Report incorrectly stated:

“Taylor et al., 2003 ... neither demonstrated a statistically significant benefit.” (IOM, 2008, p. 112).

Instead, the Taylor et al. study actually reported:

“CAPS scores declined from pretreatment to follow-up in each treatment condition [including EMDR]. For each of the four dimensions and each treatment condition, these reductions were significant”. (Taylor et al., 2003, p. 330).

The 2008 IOM Report incorrectly stated:

“Vaughan et al., 1994 ... neither demonstrated a statistically significant benefit.” (IOM, 2008, p. 112).

Instead, the Vaughan et al. study actually reported:

All active treatment groups “improved significantly compared with a waiting list and that treatment benefits were maintained at follow-up.” (Vaughan et al., 1994, p. 283).

The reasons provided by the IOM Report (2008) for exclusion of EMDR studies also contain multiple errors. For example:

The 2008 IOM Report incorrectly stated:

“Three trials that did not include a comparison or control group were excluded (Ironson et al., 2002)...(IOM, 2008. P. 112).

Instead, the Ironson et al. study actually reported:

“This pilot study compared the efficacy of two treatments for PTSD: Eye Movement Desensitization and Reprocessing (EMDR) and Prolonged Exposure (PE).” (Ironson et al., 2002, p. 113).

The 2008 IOM Report incorrectly stated:

“Many trials included participants not formally diagnosed with PTSD, or only part of the sample was diagnosed so were excluded (Wilson et al., 1995).

However, the Study Committee overlooked the 15 month follow-up to the Wilson et al., 1995 study, which separated out and compared participants originally diagnosed with PTSD (N=32) and those without a PTSD diagnosis (N=34).

The 1997 Wilson et al. study reported:

“PTSD participants improved as much as those without the diagnosis, with both groups maintaining their gains at 15-months. At 15-month follow-up, the 3 90-min sessions of EMDR previously administered produced an 84% reduction in PTSD diagnosis and a 68% reduction in PTSD symptoms. The average treatment effect size was 1.59; the average reliable change index was 3.37.” (Wilson et al., 1997, p. 1047).

Errors and Omissions about Research Evaluating Eye Movements in EMDR

The 2008 IOM report incorrectly stated:

“The committee noted that some experts have questioned whether the eye movement component adds benefit to the reprocessing component, but the committee identified no adequately designed studies testing the hypothesis and so was unable to reach a conclusion”. (IOM, 2008, p. 112).

These opinions are also expressed in the 2012 Initial Assessment, which asserts that there is no evidence that the eye movement component in EMDR has therapeutic benefits (IOM, 2012, pp. 238-239).

The issue of eye movement still remains the subject of controversy and has drawn the attention of numerous memory researchers. In the past decade, about 20 randomized trials have evaluated the eye movements in isolation. They compared the eye movements with exposure-only conditions and consistently reported significantly superior effects for the eye movements compared to the no-eye-movement groups.

These studies explored various theories about the effects of eye movements. Two dominant theories have emerged: that eye movements (1) interfere with working memory processes (van den Hout et al, 2011) and (2) link into the same processes that occur during rapid eye movement (REM) sleep (Stickgold, 2002). In support of these theories, eye movements have been shown to decrease the emotionality and vividness of memories, create physiological relaxation responses, facilitate access to associative memories, and lead to an increase in recognition of information that is true, as cited below.

According to the working memory theory, benefits occur when the limited capacity of the working memory is taxed by the simultaneous focus on the dual attention task (eye movements) and the negative memory. Because of limited resources, the memory becomes less vivid, less complete, and less emotional. This theory was directly evaluated by numerous randomized studies that have all shown that lateral eye movements reduce the self-rated vividness and emotional effect of unpleasant autobiographical memories (Barrowcliff et al., 2003, 2004; Engelhard et al., 2010, 2011; Gunter & Bodner, 2008; Kavanagh, Freese, Andrade, & May, 2001; Maxfield, Melnyk, & Hayman, 2008; Schubert et al., 2010; Van den Hout et al., 2001, 2011).

The theory that eye movements link into the same processes that occur during REM sleep is supported by research demonstrating the effects of eye movements on physiological states and memory. Eye movements have been demonstrated to induce a state of relaxation, or decreased psychophysiological arousal, in nonrandomized (Elofsson et al., 2008; Sack et al., 2008) and randomized (Barrowcliff et al., 2004; Schubert et al., 2011) studies using physiological measures. One hypothesis is that this relaxation response is a reaction to changes in the environment, part of an orienting response that is elicited by the shifts of attention caused by the repeated bilateral stimulation, which links into processes similar to what occurs during REM sleep (Stickgold 2002, 2008). Further support for the REM theory is found in numerous randomized trials that indicate that bilateral saccadic eye movement enhances retrieval of episodic memory, increases recognition of true information and improves certain measures of attention (Christman et al., 2003, 2006; Kuiken et al., 2002; 2010; Parker, Buckley, & Dagnall, 2009; Parker & Dagnall, 2007; Parker, Relph, & Dagnall, 2008).

Neurobiological studies utilizing psychophysiological and neuroimaging examinations for pre- and post-EMDR treated individuals diagnosed with PTSD have noted changes to left frontal lobe activation (Lansing et al., 2005; Levin et al., 1999; Oh & Choi, 2007), decreased occipital activation (Lansing et al., 2005; Pagani et al., 2007), and decreased temporal lobe activation (Oh & Choi, 2007; Pagani et al., 2007). These findings are indicative of the following: (a) emotional regulation due to increased activity of the prefrontal lobe, (b) inhibition of limbic over-stimulation by increased regulation of the association cortex, (c) reduction in the intrusion and over-consolidation of traumatic episodic memory due to the reduction of temporal lobe activity, (d) the reduction of occipitally mediated flashbacks, and (e) the induction of a functional balance between the limbic and prefrontal areas. Combining the patterns found in theoretical models and empirical findings allows us to make a collective speculation regarding the nature of EMDR stimulation (visual, auditory, and tactile) and its relationship to the neural circuitry underlying EMDR's mechanism of action. See Bergmann (2010) for a survey of EMDR neurobiological mechanisms of action.

Still, controversy remains regarding exactly why EMDR therapy works. It is possible that both the working memory and REM theories are correct and that the mechanisms interact synergistically. We await the results of randomized controlled trials to further determine what role eye movements make to treatment outcome independent of the rest of EMDR procedures.

Perceptions of Bias - EMDR and VA/DoD Research

We draw your attention to the fact that the VA and DoD have not included EMDR in a single research project during the past 14 years. EMDR therapy was, and remains today, identified as an evidence-based psychotherapy for PTSD in the VA/DoD (2004, 2010) clinical practice guidelines and every major PTSD

practice guideline globally. We hope that awareness of this oversight will raise questions by the IOM: Why there has been no EMDR research during the past 14 years?

In 2008, the IOM committee made some general recommendations about research:

“that VA and other funders of PTSD treatment research seek ways to give opportunities to a broad and diverse group of investigators to ensure that studies are conducted by individuals and in settings without potential financial or intellectual conflicts of interest (IOM 2008, p. 141),” and “well-designed research is needed to answer the key questions regarding the efficacy of treatment modalities in veterans. Success will depend on the collaboration of VA and other government agencies, researchers, clinicians, and patient and veterans’ groups and will further require the continued support and attention of policymakers and the public. The individuals returning from current conflicts and now re-entering civilian life with this disorder deserve no less” (IOM 2008, p. x).

EMDRIA strongly supports these recommendations. The IOM Report (2008) also made some specific recommendations for EMDR research, and we also strongly support those recommendations.

“The committee is uncertain about the presence of an effect, and believes that future well-designed studies will have an important impact on confidence in the effect and the size of the effect” (IOM, 2008, p. 112).

When making this recommendation in 2008, seven years into the Iraq and Afghanistan Wars, the IOM panel apparently failed to consider that neither the VA nor the DoD, the principle agencies charged with military PTSD research, had conducted an RCT on EMDR therapy, since 1998. Now four years and millions of research dollars after the IOM’s well-intentioned recommendation for “*future well-designed studies*” (2008, p. 112) to clear up the apparent uncertainty over EMDR’s efficacy, the VA and DoD have still not implemented IOM’s recommendations, despite PTSD research funding increasing from \$9.9 million in fiscal year 2005 to \$24.5 million in fiscal year 2009.

The Government Accountability Office (GAO, 2011) was asked to report on VA funding of PTSD research, and its processes for funding PTSD research proposals, reviewing and incorporating research outcomes into clinical practice guidelines – tools that offer clinicians recommendations for clinical services but do not require clinicians to provide one service over another – and determining which PTSD services are required to be made available at VA facilities. The GAO questioned the VA about its policy to select some PTSD treatments for its clinical handbook and exclude others (like EMDR). The GAO stated:

“Specifically, VA officials told us that their decision to include cognitive processing therapy and prolonged exposure therapy in the Handbook was influenced by the fact that both of these had been graded as level “A” treatments in the 2004 PTSD CPG (indicating that the intervention is always indicated and acceptable),” and that “VA officials told us that prior to issuing the Handbook in 2008, VA had already begun investing considerable resources to implement national training programs for cognitive processing therapy and prolonged exposure therapy in 2006 and 2007, respectively.” In their report, the GAO mentions in a footnote that “Two other psychotherapies, stress inoculation training and eye movement desensitization and reprocessing, were also graded as level “A” treatments for PTSD in the 2004 PTSD CPG, but were not included in the Handbook.”

According to the above document, it appears that the VA decision to “invest considerable resources” in PE and CPT predated IOM’s (2008) report which had been commissioned by the VA.

The fact that EMDR therapy was, and remains today, identified as an evidence-based psychotherapy by the VA/DoD Clinical Practice Guidelines (2004, 2010), and almost every major PTSD practice guideline globally,

we hope will inspire IOM to question why there has been no EMDR research during the past 14 years and why EMDR was not included in the Handbook.

Investigations of EMDR by the VA/DoD During the Late 1980's through the 1990's

The first PTSD treatment research studies were conducted in 1989 – one evaluating hypnosis and psychodynamic therapy (Brom et al., 1989) and the other exposure therapy (Keane, Fairbank, Cadell, & Zimering, 1989). Neither study produced large effects. Shapiro's inaugural EMD(R) study was also published in 1989 and it included several Vietnam War veterans. At that time, veterans were considered hard to treat and Shapiro's report of marked PTSD symptom reduction after a single-session garnered both interest and skepticism.

The VA was inundated with a new generation of warrior patients from the First Gulf War including thousands of veterans afflicted with Gulf War Syndrome. In 1993 VA clinician-researchers Lipke and Botkin conducted a multiple case study with five clients in a VA PTSD program and reported substantial improvement. An article by Miller (1994) in the *Army Medical Department Journal*, recommended the use of EMDR as a therapeutic intervention for combat stress and battle fatigue. It reported that using EMDR therapy in a forward capacity during combat expedited the return to duty of soldiers who experience battle fatigue. Miller recommended more rigorous studies on this application.

Then in 1996, the 18 members of Colonel Stokes's Army Combat Stress Control (CSC) unit were trained in EMDR, pending an operational deployment to Bosnia in support of the United Nations peacekeeping mission. The CSC unit provided EMDR to military peacekeepers, resulting in rapid reduction of acute combat stress reactions, possibly preventing military attrition and long-term disability. Stokes reported that requests to conduct research on EMDR therapy met with resistance from military medicine leadership. He stated that this was due in large part to the limited number of RCTs of EMDR efficacy available at that time as well as what appeared to be an apparent entrenched professional bias against EMDR's unorthodox methodology. (J. Stokes, personal communication with M. Russell, 2 June 2005).

From 1993 to 1996, the VA conducted four RCTs on EMDR treatment for Vietnam Veterans with combat-PTSD, perhaps seeking to determine whether EMDR actually might be a miraculous breakthrough in the way of penicillin, i.e., a single session cure for PTSD. These RCTs provided only two EMDR sessions (Boudewyns, et al., 1993; Jensen, 1994) or treatment of a single memory (Boudewyns & Hyer, 1996; Pitman et al., 1996) and reduced subjective distress in relation to the memory, but achieved no significant or sustained difference between control groups, or at 15-month follow-up (Macklin, Metzger, Lasko, Berry, Orr, & Pitman, 2000). Critics were harsh in their condemnation of EMDR and Shapiro was harsh in her criticism of the clinicians and researchers. Probably each side had valid points – EMDR was usually not effective in just one or two sessions, but some treatment was provided without fidelity to the method. Nevertheless, issues became politicized and polarized (Perkins & Rouanzoin, 2002).

In 1998, Carlson et al. conducted an RCT at the VA Medical Center in Honolulu to address the contradictory findings in EMDR research, with poor/moderate results from the VA's previous RCTs compared to positive reports from studies with civilian participants. Instead of just one or two sessions, 12 EMDR sessions were provided to veterans, targeting multiple memories. A total of 35 Vietnam War veterans diagnosed with combat-PTSD, were randomly assigned to one of three groups: EMDR therapy, a control group receiving routine VA clinical care for PTSD, and biofeedback assisted relaxation training. After EMDR, 77% of combat-veterans no longer met diagnostic criteria for PTSD with results maintained at 3- and 9-month follow-ups. Specifically, "very substantial" EMDR treatment effects were found on the majority of psychometrics, with statistically significant differences showing EMDR treatment superior to veterans receiving routine clinical care and biofeedback assisted relaxation therapy.

An additional important finding in the Carlson et al. (1998) study concerned dropout rates. Treatment of PTSD in veterans is made difficult in part by the fact that many veterans have problems tolerating therapy that requires a focus on memories concerning their trauma, which includes desensitization treatments in all forms. One result is a tendency of PTSD patients to stop therapy before treatment is complete (Schottenbauer et al., 2008), which can seriously impact therapeutic effects. A distinct advantage of EMDR is the process of minimizing exposure to short periods (typically about 20 seconds) of exposure to a trauma-related memory that is repeated until a patient's related distress is reduced. By comparison, prolonged exposure therapy involves repeated and long periods during which memories of trauma are required. In the Carlson et al. study, dropout rates were very low, no participants dropped out of the EMDR group and one participant dropped out of a comparison treatment (relaxation) group (an attrition rate of 3% for all the assigned groups). *After* treatment and before follow-up assessment, just one participant dropped out of the eye movement group (3 out of the other treatment group).

It is notable (Carlson, 6 October 2012, personal communication) that the funding agency for the Carlson et al. study (National Institute of Health (NIH), Nursing Research), was insistent that rather than the initially proposed type of exposure treatment (devised by Keane et al., 1989) which was potentially too intrusive and upsetting for combat veterans, a different form of treatment needed to be used for this study. For this reason, the researchers received permission from NIH to substitute EMDR for the exposure condition, with the positive results previously noted. Some meta-analyses have suggested that dropout rates may be the same across a range of desensitization treatments for PTSD (Schottenbauer et al., 2008) but that there are serious methodological concerns in assessing study outcomes. At this time, pending further research, compassion for military and veteran populations would argue for treatments for PTSD that minimize distress while reducing dropouts and enhancing positive outcomes. One might have expected that the VA would have followed up this promising study with more research – twelve sessions was still short-term treatment and the results were significant. One might assume that this therapy would be helpful for some veterans. Unfortunately, there was no follow-up by the VA and no attempt at replication of the results of Carlson et al.'s 1998 study.

EMDR in the Real World of the Military in the 21st Century

EMDR in Clinical Practice in the 21st Century

Initiation of the Global War on Terror, the longest war in American history, began in October 2001, and each subsequent war year the number of veterans receiving VA mental health care has increased, from about 900,000 in fiscal year 2006 to about 1.2 million in fiscal year 2010 and with growing numbers. The primary treatments provided have been CBT, PE and CPT (GAO, 2011). In February 2012, a Congressional Budget Office (CBO 2012, p. 4) report showed that only about 40% of the active duty personnel seeking counseling completed these therapies. Nonetheless, NCPTSD has continued to advocate for PE and CPT along with drug therapy (GAO, 2011).

As the wars in Iraq and Afghanistan progressed and despite widely publicized escalation in numbers of service personnel experiencing war stress injuries such as PTSD, depression, substance abuse, and suicide, the DoD and VA continued to use only treatment manuals and protocols for CPT and PE. This effectively prohibited EMDR research and training and significantly restricted military patient access to EMDR treatment. An offshoot of this position showed up with Tricare Management Activity, the major health insurance agency for military personnel, retirees, and their families. TRICARE denied veterans and family member access to EMDR therapy by listing it as an “unproven treatment” contrary to the 2004 Clinical Practice Guidelines of the VA, DoD and the American Psychiatric Association. This situation was serious, given that nearly 40% of returning Iraq war veterans were from Reserve and National Guard components that rely upon mental healthcare services either through the VA system or the civilian sector via TRICARE. This situation continued for several years, until 2009 when TRICARE began recognizing EMDR therapy as an accepted treatment.

About five years ago, the U. S. Army selected EMDR along with PE and CPT as an empirically validated therapy for their trauma training program. Currently more than 500 psychotherapists have received the prerequisite basic training in EMDR including consultation. While EMDR therapy has been used effectively in Iraq and Afghanistan, it is still seen as a secondary treatment by the VA/DoD. It is not included in the Handbooks; research on EMDR therapy is not planned. It is not available to many military personnel who could benefit from EMDR treatment.

Recent Case Study Research on EMDR by DoD Clinicians and Others

Until as late as 2005, there were no known RCTs, either funded, or conducted by the DoD on psychotherapies for Acute Stress Disorder (ASD) or PTSD with active-duty military personnel. All clinical research on military-related PTSD treatment had been done primarily through the VA, and almost exclusively with Vietnam War era veterans, decades after their military careers ended.

A joint DoD/VA regional training program provided the unprecedented opportunity to collect clinical data on the “real-world” effectiveness of EMDR therapy being used on the front-lines in actual military and operational healthcare settings. Nine separate EMDR trained military clinicians, representing different military branches, mental health disciplines, treatment settings, and military base locations, submitted a total of 72 cases via archival chart review of completed treatments of military personnel using EMDR therapy, including 48 cases diagnosed with combat-related ASD/PTSD. The results of this case series revealed clinically significant symptom reduction after an average of four EMDR sessions for non-wounded personnel, and an average of eight sessions for those wounded-in-action (Russell, Silver, Rogers, & Darnell, 2007). Limitations of interpreting these findings are obvious, including the possibility of selection bias, lack of control groups, and so forth. Nevertheless, the implications were profound as this was the first-ever test of a therapy effectiveness of any of the VA/DoD’s recommended evidence-based treatments with military personnel outside of a clinic-like inpatient or outpatient setting, on the front-lines.

In addition to the aforementioned case study, several other single and multiple case studies have been published involving EMDR treatment of U.S. military personnel. A 2006 case study by Howard, a Navy Chaplain, and Cox (Howard & Cox, 2006) described the successful EMDR treatment of a Navy recruit for a water phobia during boot camp.

There have also been three published EMDR case studies involving military personnel outside of the USA demonstrating that EMDR therapy is also being used effectively by the military organizations of other countries. Wesson and Gould (2009) successfully treated an U.K. soldier diagnosed with an acute stress reaction resulting in a return to full-duty status with sustained improvement at 18-months. Forty German military personnel were treated with EMDR therapy in a military inpatient setting for non-combat related PTSD with treatment gains maintained on standardized measures at 29 months (Zimmermann, Biesold, Barret, & Lanczik, 2007). Another recent study that was conducted by German therapists (Bandelow et al., 2012) gathered outcome data in a naturalistic setting and conducted an open retrospective analysis on 116 hospitalized military personnel with PTSD (39% with combat-related trauma). Patients received EMDR, CBT, medication, and other supportive strategies, with EMDR used with the majority (87.2%) of patients. The treatment was rated as successful by 91 (77.8%) of the patients (and their therapists) and the soldiers were assessed to be fit for service after treatment.

Summary and Conclusions

In this Response, we are providing you with concerns regarding the accuracy of information as well as omissions in the most recent 2012 IOM report. In particular, we are concerned that these errors have perpetuated misunderstandings and misperceptions of EMDR therapy and that they may have been used to justify excluding EMDR from further research, clinician training, and utilization of EMDR therapy for active duty service personnel and veterans.

The following summarizes some of the salient facts discussed in our Response:

- There is agreement:
 - scientific panels of PTSD experts in the United States and across the world agree that EMDR therapy is one of a small handful of “evidence-based treatments” which help clients suffering from traumatic stress injuries including veterans and those affected by combat.
 - the scientific community does not know exactly how EMDR works.
 - between institutional military medicine and the global scientific community that EMDR treatment can be just as effective as other evidence-based treatments including PE and CPT.
- EMDR gets the same desensitization effects as PE and other exposure therapies:
 - despite violating principles of exposure therapy including fleeting attention to the trauma itself, reinforcing client free association that helps avoid exposure to the traumatic event, and not instructing the client to utilize relaxation response to counter-condition the stress response.
 - without requiring extensive cognitive/rational disputation, cognitive restructuring, and client education.
 - with substantially limited “talking” by the therapist, whose responses are generally restricted to “just notice that” and adding eye movements.
 - with minimal client self-disclosure in contrast to exposure therapy, cognitive processing, and talk therapies that rely on extensive, repetitive self-disclosure.
 - without requiring any homework assignments as compared to 40-60 hours in PE, CPT, and other CBT.
 - without expensive, complicated computer hardware and virtual reality software.
- EMDR therapy has been shown:
 - during processing of PTSD symptoms, to effectively and simultaneously reduce associated symptoms such as medically unexplained conditions (e.g., phantom limb pain), traumatic grief, and/or depression, by using a single treatment protocol.
 - to demonstrate significant pre-post treatment effects on neuroimaging and neurophysiological studies that coincide with symptom reduction.
 - to be a cost-effective, evidence-based treatment for war stress injuries across military treatment settings in clinical settings or the frontlines outside the research laboratory.

In light of these facts, we propose that the IOM support the following immediate and long-term initiatives:

1. Publish a corrected and revised IOM 2012 report – *Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Initial Assessment*.
2. Investigate to determine if political, personal, and possible financial conflicts of interest have jeopardized the integrity of the 2012 Initial Assessment.
3. Recommend federal funding primarily through the VA/DoD to conduct research on EMDR therapy with military populations (active duty and veterans) to investigate which type of treatment (e.g., PE, EMDR, or CPT) is more effective with which type of trauma, or symptom pattern, or presentation, or personality. It is time to determine how to best match treatment to client needs.
4. Support EMDR training for VA/DoD mental health clinicians who treat ASD/PTSD.
5. Encourage VA/DoD mental health clinicians to select appropriate treatment modalities from among all evidence-based psychotherapies for clients without undue restrictions, limitations, or influence.
6. Reflect accurately in an unbiased manner what is known and not known about EMDR therapy as well as other treatment modalities in Phase 2 of the current IOM report.

7. Incorporate comments of the EMDRIA Response into Phase 2 of the study so that EMDR is treated fairly and appropriately relative to other evidence-based therapies.
8. Contact scholarly experts in EMDR to engage in dialogue and collaboration as needed.
9. Include EMDRIA recommended reviewers for Phase 2 of the report.

A recent *Time* magazine cover article (July 23, 2012) reports that more soldiers have committed suicide than have died in the war in Afghanistan. The military/veteran mental health system is being overwhelmed and needs all the evidence-based psychotherapies as treatments to alleviate human suffering and counteract the enormous wave of tragic outcomes. There is an ethical mandate and a moral responsibility to provide our troops with all the best evidence-based treatments available. EMDR is one of the evidence-based therapies that should be available for the treatment of posttraumatic stress disorder for all veterans and active duty service men and women.

Respectfully submitted,

EMDR International Association

Warren Faber

Warren Faber, Ph.D.
President
EMDR International Association

Kate Wheeler

Kate Wheeler, Ph.D., APRN, FAAN
President-Elect
EMDR International Association

Mark G. Doherty

Contact: Mark G. Doherty, CAE
Executive Director
EMDR International Association
5806 Mesa Drive, Suite 360
Austin, TX 78731-3785
Phone: 512-451-5200
Email: mdoherty@emdria.org

References

- American Psychiatric Association. (2004 & 2009). Practice Guidelines for the Treatment of Patient with Acute Stress Disorder and Posttraumatic Stress Disorder. Arlington, VA: American Psychiatric Association Practice Guidelines.
- American Psychological Association (Division 12). Chambless, D. L., Baker, M. J., Baucom, D.H., Beutler, L. E., Calhoun, K. S., Crits-Christoph, P., Daiuto, A., DeRubeis, R., Detweiler, J., Haaga, D.A.F., et al. (1998). Update of empirically validated therapies, II. *The Clinical Psychologist*, 51, 3-16.
- Bandelow, B., Koch, M., Zimmermann, P., Biesold, K-H, Wedekind, D., &Falkai, P. (2012). Posttraumatic stress disorder (PTSD) in the German Armed Forces: a retrospective study in inpatients of a German army hospital. *European Archives of Psychiatry and Clinical Neuroscience*, 262, 459-467.
- Barrowcliff, A.L., Gray, N.S., Freeman, T.C.A., &MacCulloch, M.J. (2004). Eye-movements reduce the vividness, emotional valence and electrodermal arousal associated with negative autobiographical memories. *Journal of Forensic Psychiatry and Psychology*, 15, 325-345.
- Barrowcliff, A.L., Gray, N.S., MacCulloch, S., Freeman, T.C.A., &MacCulloch, M.J. (2003). Horizontal rhythmical eye movements consistently diminish the arousal provoked by auditory stimuli. *British Journal of Clinical Psychology*, 42(Pt 3), 289-302.
- Bergmann, U. (2010). EMDR's neurobiological mechanisms of action: a survey of 20 years of searching. *Journal of EMDR Practice and Research*, 4(1), 22-42.
- Bisson, J. L. (2007). Eye movement desensitisation and reprocessing reduces PTSD symptoms compared with fluoxetine at six months post-treatment. *Evidence-based Mental Health*, 10(4), 118.
- Boudewyns, P. A. &Hyer, L. A. (1996). Eye movement desensitization and reprocessing (EMDR) as treatment for post-traumatic stress disorder (PTSD). *Clinical Psychology and Psychotherapy*, 3(3), 185-195.
- Boudewyns, P. A., Stwertka, S. A., Hyer, L. A., Albrecht, J. W., &Sperr, E. V. (1993). Eye movement desensitization for PTSD of combat: A treatment outcome pilot study. *The Behavior Therapist*, 16(2), 29-33.
- Bradley, R., Greene, J., Russ, E., Dutra, L., &Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry*, 162, 214-227.
- Brom, D., Kleber, R. J., & Defares, P. B. (1989). Brief psychotherapy for posttraumatic stress disorders. *Journal of Consulting and Clinical Psychology*, 57, 607-612.
- Carlson, J. G., Chemtob, C. M., Rusnack, K., Hedlund, N. L., &Muraoka, M. Y. (1998). Eye movement desensitization and reprocessing for combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, 11, 3-24.
- Chambless, D.L. et al. (1998). Update of empirically validated therapies, II. *The Clinical Psychologist*, 51, 3-16.
- Christman, S. D., Garvey, K. J., Propper, R. E., &Phaneuf, K. A. (2003). Bilateral eye movements enhance the retrieval of episodic memories. *Neuropsychology*, 17(2), 221-229.

- Christman, S. D., Propper, R. E., & Brown, T. J. (2006). Increased interhemispheric interaction is associated with earlier offset of childhood amnesia. *Neuropsychology*, 20(3), 336-345.
- Cochrane Database of Systematic Reviews. Bisson, J., & Andrew, M. (2007). Psychological treatment of post-traumatic stress disorder (PTSD). *Cochrane Database of Systematic Reviews*, 3, Art. No.: CD003388. DOI: 10.1002/14651858.CD003388.pub3.
- Congressional Budget Office. (2012). The Veterans Health Administration's Treatment of PTSD and Traumatic Brain Injury Among Recent Combat Veterans. Publication No. 4097.
- Cook, J. M., Biyanova, T., Coyne, J. C. (2008). Comparative case study of diffusion of eye movement desensitization and reprocessing in two clinical settings: empirically supported treatment status is not enough. *Professional Psychology: Research and Practice*. 40(5), 518-524.
- Cooper, N.A., & Clum, G.A. (1989). Imaginal flooding as a supplementary treatment for PTSD in combat veterans: A controlled study. *Behavior Therapy*, 20, 381-391.
- Creamer, M., & Forbes, D. (2004). Treatment of posttraumatic stress disorder in military and veteran populations. *Psychotherapy: Theory, Research, Practice, Training*, 41, 388-398.
- CREST (2003). The management of post-traumatic stress disorder in adults. Clinical Resource Efficiency Support Team, Northern Ireland, Department of Health, Social Services, and Public Safety. Belfast, Ireland.
- Davidson, P.R., & Parker, K.C.H. (2001). Eye movement desensitization and reprocessing (EMDR): A meta-analysis. *Journal of Consulting and Clinical Psychology*, 69, 305-316.
- Dutch National Steering Committee Guidelines Mental Health Care (2003). Multidisciplinary Guideline Anxiety Disorders. Quality Institute Health Care CBO/Trimbos Institute. Utrecht, Netherlands.
- Edmond, T., Rubin, A., & Wambach, K. (1999). The effectiveness of EMDR with adult female survivors of childhood sexual abuse. *Social Work Research*, 23, 103-116.
- Edmond, T., Sloan, L., & McCarty, D. (2004). Sexual abuse survivors' perceptions of the effectiveness of EMDR and eclectic therapy: A mixed-methods study. *Research on Social Work Practice*, 14, 259-272.
- Engelhard, I. M. (2012). Making science work in mental healthcare. *European Journal of Psychotraumatology* 2012, 3:18740.
- Engelhard, I. M., van den Hout, M. A., Janssen, W. C., & van der Beek, J. (2010, May). Eye movements reduce vividness and emotionality of "flashforwards". *Behaviour Research and Therapy*, 48(5), 442-447.
- Engelhard, I. M., van den Hout, M. A., & van Uijen, S. L. (2011, May). Het vervagen van negatieve en positieve herinneringen [The blurring of negative and positive memories]. *Psychologie & Gezondheid*, 39(2), 61-69.
- Elofsson, U.O.E., von Scheele, B., Theorell, T., & Sondergaard, H.P. (2008). Physiological correlates of eye movement desensitization and reprocessing. *Journal of Anxiety Disorders*, 22, 622-634.

- Foa, E.B., Keane, T.M., Friedman, M.J., & Cohen, J.A. (2009). *Effective treatments for PTSD: Practice Guidelines of the International Society for Traumatic Stress Studies* New York: Guilford Press.
- Forbes, D., M. Creamer, J. I. Bisson, J. A. Cohen, B. E. Crow, E. B. Foa, M. J. Friedman, T. M. Keane, H. S. Kudler, and R. J. Ursano. 2010. A guide to guidelines for the treatment of PTSD and related conditions. *Journal of Traumatic Stress* 23(5):537-552.
- Gosselin, P., & Matthews, W. J. (1995). Eye movement desensitization and reprocessing in the treatment of test anxiety: A study of the effects of expectancy and eye movement. *Journal of Behavior Therapy and Experimental Psychiatry*, 26, 331–337.
- Government Accountability Office. January 2011. VA Health Care: VA spends millions on post-traumatic stress disorder research and incorporates research outcomes into guidelines and policy for post-traumatic stress disorder services. Subcommittee on Health, Committee on Veterans' Affairs, House of Representatives. Report to the Ranking member, Report 11-32.
- Gunter, R. W., & Bodner, G. E. (2008). How eye movements affect unpleasant memories: Support for a working-memory account. *Behaviour Research and Therapy*, 46, 913– 931.
- Howard, M. D., & Cox, R. P. (2006). Use of EMDR in the treatment of water phobia at Navy boot camp: A case study. *Traumatology*, 12 (12), 302-313.
- INSERM (2004). *Psychotherapy: An evaluation of three approaches*. French National Institute of Health and Medical Research. Paris, France.
- Institute of Medicine (2008). *Treatment of posttraumatic stress disorder: An assessment of the evidence*. National Academies Press: Washington, DC.
- Institute of Medicine (2012). *Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Initial Assessment*. National Academies Press: Washington, DC.
- International Society for Traumatic Stress Studies. Foa, E. B., Keane, T. M., Friedman, M. J., & Cohen, J.A. (2009). *Effective treatments for PTSD: Practice Guidelines of the International Society for Traumatic Stress Studies*. New York: Guilford Press.
- Ironson, G.I., Freund, B., Strauss, J.L., & Williams, J. (2002). Comparison of two treatments for traumatic stress: A community-based study of EMDR and prolonged exposure. *Journal of Clinical Psychology*, 58, 113-128.
- Jensen, J. A. (1994). An investigation of eye movement desensitization and reprocessing (EMD/R) as a treatment for posttraumatic stress disorder (PTSD) symptoms of Vietnam combat veterans. *Behavior Therapy*, 25, 311–326.
- Kavanagh, D. J., Freese, S., Andrade, J., & May, J. (2001, September). Effects of visuospatial tasks on desensitization to emotive memories. *British Journal of Clinical Psychology*, 40(3), 267–280.
- Kuiken, D., Bears, M., Miall, D., & Smith, L. (2001/2002). Eye movement desensitization reprocessing facilitates attentional orienting. *Imagination, Cognition and Personality*, 21(1), 3-20.

- Keane, T.M., Fairbank, J.A., Caddell, J.M., & Zimmering, R.T., (1989). Implosive (flooding) therapy reduces symptoms of PTSD in Vietnam combat veterans. *Behavior Therapy*, 20, 245-260.
- Kulka, R.A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B., Marmar, C. R., & Weiss, D. S. (1990). Trauma and the Vietnam War Generation: Report of Findings from the National Vietnam Veterans Readjustment Study. New York, NY: Brunner/Mazel.
- Lansing, K., Amen, D. G., Hanks, C., & Rudy, L. (2005). High resolution brain SPECT imaging and EMDR in police officers with PTSD. *Journal of Neuropsychiatry and Clinical Neurosciences*, 17, 526–532.
- Levin, P., Lazrove, S., & van der Kolk, B. A. (1999). What psychological testing and neuroimaging tell us about the treatment of posttraumatic stress disorder (PTSD) by eye movement desensitization and reprocessing (EMDR). *Journal of Anxiety Disorders*, 13, 159–172.
- Lee, C., Gavriel, H., Drummond, P., Richards, J. & Greenwald, R. (2002). Treatment of post-traumatic stress disorder: A comparison of stress inoculation training with prolonged exposure and eye movement desensitization and reprocessing. *Journal of Clinical Psychology*, 58, 1071-1089.
- Lee, C. W., & Schubert, S. (2009). Omissions and errors in the Institute of Medicine's report on scientific evidence of treatment for posttraumatic stress disorder. *Journal of EMDR Practice and Research*, 3(1), 32-38. doi:10.1891/1933-3196.3.1.32.
- Lipke, H.J. and Botkin, A. (1993). Case studies of eye movement desensitization and reprocessing (EMDR) with chronic post-traumatic stress disorder. *Psychotherapy*, 29, 591-595.
- Macklin, M. L., Metzger, L. J., Lasko, N. B., Berry, N. J., Orr, S.P., & Pitman, R. K. (2000, January-February). Five-year follow-up study of eye movement desensitization and reprocessing therapy for combat-related posttraumatic stress disorder. *Comprehensive Psychiatry*, 41(1), 24-27.
- Marcus, S., Marquis, P. & Sakai, C. (1997). Controlled study of treatment of PTSD using EMDR in an HMO setting. *Psychotherapy*, 34, 307-315. Follow-up: Marcus, S., Marquis, P. & Sakai, C. (2004). Three- and 6-month follow-up of EMDR treatment of PTSD in an HMO setting. *International Journal of Stress Management*, 11, 195-208.
- Marks, I. M., Lovell, K., Noshirvani, H., Livanou, M., & Thrasher, S. (1998). Treatment of posttraumatic stress disorder by exposure and/or cognitive restructuring: A controlled study. *Archives of General Psychiatry*, 55, 317–325.
- Maxfield, L. (2008). Considering mechanisms of action in EMDR. *Journal of EMDR Practice and Research*, 2(4), 234-238.
- Maxfield, L. & Hyer, L. (2002). The relationship between efficacy and methodology in studies investigating EMDR treatment of PTSD. *Journal of Clinical Psychology*, 58, 23 – 42.
- Miller, J. R. (1994, September-October). Eye movement desensitization reprocessing: Application on the battlefield. *Army Medical Department Journal*, (PB-8-947/8) 33-36.
- National Council for Mental Health: Bleich, A., Kotler, M., Kutz, L., Shaley, A. (2002). National Council for Mental Health: Guideline for the assessment and professional intervention with terror victims in the hospital and in the community. Jerusalem, Israel.

- National Institute for Clinical Excellence (2005). Post-traumatic stress disorder (PTSD): The management of adults and children in primary and secondary care. London: NICE Guidelines.
- Oh, D.-H., & Choi, J. (2007). Changes in the regional cerebral perfusion after Eye Movement Desensitization and Reprocessing: A SPECT study of two cases. *Journal of EMDR Practice and Research*, 1(1), 24–30.
- Pagani, M., Hogberg, G., Salmaso, D., Nardo, D., Sundin, O., Jonsson, C., et al. (2007). Effects of EMDR psychotherapy on 99m Tc-HMPAO distribution in occupation related post-traumatic stress disorder. *Nuclear Medicine Communications*, 28(10), 757–765.
- Parker, A., & Dagnall, N. (2007). Effects of bilateral eye movements on gist based false recognition in the DRM paradigm. *Brain and Cognition*, 63(3), 221–225
- Parker, A., Buckley, S., & Dagnall, N. (2009). Reduced misinformation effects following saccadic bilateral eye movements. *Brain and Cognition*, 69(1), 89-97
- Parker, A., Relph, S., & Dagnall, N. (2008). Effects of bilateral eye movements on the retrieval of item, associative, and contextual information. *Neuropsychology*, 22(1), 136-145.
- Perkins, B., & Rouanzoin, C. (2002, January). A critical evaluation of current views regarding eye movement desensitization and reprocessing (EMDR): Clarifying points of confusion. *Journal of Clinical Psychology*, 58(1), 77-97.
- Pitman, R., Orr, S., Altman, B., Longpre, R., Poire, R., Macklin, M., Michaels, M. J., & Steketee, G. S. (1996, November-December). Emotional processing and outcome of imaginal flooding therapy in Vietnam veterans with chronic posttraumatic stress disorder. *Comprehensive Psychiatry*, 37(6), 409-418.
- Rothbaum, B. O., M. C. Astin, and F. Marsteller. 2005. Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress* 18(6):607-616.
- Russell, M. (2006). Treating combat-related stress disorders: A multiple case study utilizing eye movement desensitization and reprocessing (EMDR) with battlefield casualties from the Iraqi War. *Military Psychology*, 18(1) 1-18.
- Russell, M., & Silver, S. M. (2007). Training needs for the treatment of combat-related post-traumatic stress disorder: A survey of Department of Defense clinicians. *Traumatology*, 13(3), 4-10.
- Russell, M., Silver, S., Rogers, S., & Darnell, J. (2007). Responding to an identified need: A joint DoD-VA training program for clinicians treating trauma survivors. *International Journal of Stress Management*, 14(1) 61-71.
- Sack, M., Lempa, W., Steinmetz, A., Lamprecht, F., & Hofmann, A. (2008). Alterations in autonomic tone during trauma exposure using eye movement desensitization and reprocessing (EMDR) – results of a preliminary investigation. *Journal of Anxiety Disorders*, 22, 1264-1271.
- Schottenbauer, M.A., Glass, C. R., Arnkoff, D. B., Tendick, V., & Gray, S.H. (2008, Summer). Nonresponse and dropout rates in outcome studies on PTSD: Review and methodological considerations. *Psychiatry: Interpersonal and Biological Processes*, 71, 134-168.

- Schubert, S. (2010, July). The efficacy and psycho physiological correlates of dual-attention tasks in EMDR. Poster presented at the 1st EMDR Asia Conference, Bali, Indonesia.
- Schubert, S.J., Lee, C.W. & Drummond, P.D. (2011). The efficacy and psychophysiological correlates of dual-attention tasks in eye movement desensitization and reprocessing (EMDR). *Journal of Anxiety Disorders*, 25, 1-11.
- Seidler, G. H., & Wagner, F. E. (2006). Comparing the efficacy of EMDR and trauma-focused cognitive-behavioral therapy in the treatment of PTSD: A meta-analytic study. *Psychological Medicine*, 36(11), 1515-1522.
- Shapiro, F. (1989). Efficacy of the eye movement desensitization procedure in the treatment of traumatic memories. *Journal of Traumatic Stress*, 2(2), 199-223.
- Shapiro, F. (2001). *Eye movement desensitization and reprocessing: Basic principles, protocols and procedures* (2nd ed.). New York: Guilford Press.
- Spates, C. R., Koch, E., Cusack, K., Pagoto, S., & Waller, S. (2009). Eye movement desensitization and reprocessing. In E. B. Foa, T. M. Keane, M. Terence, M. J. Friedman, & J. A. Cohen, (Eds) *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (2nd ed.) (pp. 279-305) New York: Guilford Press. xiii, 658 pp.
- Stickgold, R., (2002), EMDR: A putative neurobiological mechanism of action. *Journal of Clinical Psychology*, 58, 61-75.
- Stickgold, R. (2008). Sleep-dependent memory processing and EMDR action. *Journal of EMDR Practice and Research*, 2, 289-299.
- Stockholm: Medical Program Committee/Stockholm City Council. Sjöblom, P.O., Andréewitch, S. Bejerot, S., Mörtberg, E., Brinck, U., Ruck, C., & Körlin, D. (2003) Regional treatment recommendation for anxiety disorders. Stockholm: Medical Program Committee/Stockholm City Council.
- Substance Abuse and Mental Health Services Administration (SAMHSA). (2010). Eye movement desensitization and reprocessing. National Registry of Evidence-Based Programs and Practices, U.S. Department of Health and Human Services.
- Taylor, S. et al. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology*, 71, 330-338.
- Therapy Advisor (2004-7). National Institute of Mental Health -sponsored website listing empirically supported methods. <http://www.therapyadvisor.com>.
- United Kingdom Department of Health (2001). Treatment choice in psychological therapies and counseling evidence-based clinical practice guideline. London, England Potential Advantages of EMDR Therapy with Military Personnel.
- VA/DoD. (2004 & 2010). Clinical Practice Guidelines for the Management of Post-Traumatic Stress Washington, DC: Veterans Health Administration, Department of Veterans Affairs and Health Affairs, Department of Defense. Office of Quality and Performance publication 10Q-CPG/PTSD-04.

- van den Hout, M. A., Engelhard, I. M., Beetsma, D., Slofstra, C., Hornsveld, H., Houtveen, J., & Leer, A. (2011, December). EMDR and mindfulness. Eye movements and attentional breathing tax working memory and reduce vividness and emotionality of aversive ideation. *Journal of Behavior Therapy and Experimental Psychiatry*, 42(4), 423-431, doi:10.1016/j.jbtep.2011.03.004.
- van den Hout, M. A., Muris, P., Salemink, E., & Kindt, M. (2001). Autobiographical memories become less vivid and emotional after eye movements. *British Journal of Clinical Psychology*, 40(2), 121-130.
- van der Kolk, B. A., Spinazzola, J., Blaustein, M. E., Hopper, J. W., Hopper, E. K, et al. (2007). A randomized clinical trial of eye movement desensitization and reprocessing (EMDR), Fluoxetine, and pill placebo in the treatment of posttraumatic stress disorder: Treatment effects and long-term maintenance. *Journal of Clinical Psychiatry*, 68(1) pp. 37-46.
- van Etten, M. L., & Taylor, S. (1998). Comparative efficacy of treatments for posttraumatic stress disorder: A meta-analysis. *Clinical Psychology and Psychotherapy*, 5(3), 126-144.
- Vaughan, K., Armstrong, M.F., Gold, R., O'Connor, N., Jenneke, W., & Tarrier, N. (1994). A trial of eye movement desensitization compared to image habituation training and applied muscle relaxation in post-traumatic stress disorder. *Journal of Behavior Therapy & Experimental Psychiatry*, 25, 283-291.
- Wesson, M., & Gould, M. (2009). Intervening early with EMDR on military operations: A case study. *Journal of EMDR Practice and Research*, 3(2), 91-97.
- Wilson, S., Becker, L. A., & Tinker, R. H. (1995) Eye movement desensitization and reprocessing (EMDR): treatment for psychologically traumatized individuals. *Journal of Consulting and Clinical Psychology*, 63, 928-937.
- Wilson, S., Becker, L.A., & Tinker, R.H. (1997). Fifteen-month follow-up of eye movement desensitization and reprocessing (EMDR) treatment of post-traumatic stress disorder and psychological trauma. *Journal of Consulting and Clinical Psychology*, 65, 1047-1056.
- Zimmermann, P., Biesold, K. H., Barre, K., & Lanczik, M. (2007, May). Long-term course of post-traumatic stress disorder (PTSD) in German soldiers: Effects of in patient eye movement desensitization and reprocessing therapy and specific trauma characteristics in patients with non-combat-related PTSD. *Military Medical*, 172(5), 456-460 .