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## Consults

Experts on the Front Lines of Medicine

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### The Evidence on E.M.D.R.

By *THE NEW YORK TIMES*

*This week, readers of the Consults blog posed questions about eye movement desensitization and reprocessing, or E.M.D.R., a psychological therapy pioneered by Francine Shapiro that uses eye movements and other procedures to process traumatic memories. The therapy has been used increasingly to treat post-traumatic stress disorder and other traumas. You can learn more about [how E.M.D.R. therapy is done here](#). Below, Dr. Shapiro addresses reader questions about the current state of research on E.M.D.R. therapy.*

Q. Much of the research in support of E.M.D.R. has been published by Francine Shapiro. Please comment on the results of empirical studies conducted by researchers who are not E.M.D.R. practitioners, both pro and con.

J. Tyson Merrill, Ithaca, N.Y.

Q. As a clinical psychologist and scientist-practitioner trained in evidence-based methods of treatment, I strongly urge The Times to offer a more balanced presentation of the evidence when presenting an “expert” opinion. Individuals’ psychological well-being (and their treatment costs) are at stake when we talk about what “works.”

Susan, Hawaii

#### A. **Dr. Shapiro responds:**

A number of readers have asked about research on E.M.D.R. I invite any dialogue on the findings or on my interpretation of the studies; I’ve included a comprehensive reference section of published studies on E.M.D.R. to enable interested readers to access them on their own ([click here to see the list](#)).

E.M.D.R. therapy is recommended as an effective treatment for post-traumatic stress disorder in the practice guidelines of a wide range of organizations, like the American Psychiatric Association (in 2004), the Department of Veterans Affairs and Department of Defense (in 2010), the International Society of Traumatic Stress Studies (in 2009), and other organizations worldwide, including in Britain, France, the Netherlands and Israel. The one exception is a report published in 2007 by the Institute of Medicine that stated that more research was needed to establish efficacy. Since that time, six more randomized E.M.D.R. therapy studies have been conducted.

## Randomized Trials on E.M.D.R.

The effectiveness of E.M.D.R. therapy has been well established as the result of about 20 randomized controlled studies. Only one of the randomized trials was conducted by me; it was published in *The Journal of Traumatic Stress* in 1989. At that point, I believed that since I'd originated the therapeutic approach, it was important the data be independently tested.

Some of the initial studies looked at multiply traumatized combat veterans, but they used only two treatment sessions and reported mixed or negligible results (for example, see [Boudewyns et al, 1993](#); [Jensen, 1994](#)). These studies were later criticized in both the Department of Veterans Affairs/Department of Defense and International Society of Traumatic Stress Studies practice guidelines for using an inadequate dose of treatment for this population (see [DVA/DoD 2004, 2010](#) and [Chemtob et al, 2000](#)). A subsequent study ([Carlson et al., 1998](#)) conducted at a Veterans Affairs facility used 12 treatment sessions and reported a 78 percent remission in P.T.S.D.

Regarding the issue of research by nonpractitioners of E.M.D.R., all good studies should include fidelity checks to ensure that the treatments are being done appropriately. All of the 20 randomized studies have involved people who were originally trained in other approaches before evaluating E.M.D.R. therapy.

For instance, the first civilian clinical outcome research on E.M.D.R. in the United States was published in *The Journal of Consulting and Clinical Psychology* in 1995, with a 15-month follow-up published in 1997 ([Wilson, Becker and Tinker, 1995, 1997](#)). The principal investigator was a dissertation student and the second author was her faculty adviser; both had been trained in a variety of approaches. The research reported a remission of 84 percent of those initially found to have P.T.S.D. resulting from a single trauma after three 90-minute sessions.

The second randomized E.M.D.R. study of civilians ([Rothbaum, 1997](#)) was conducted by an established cognitive behavioral therapy researcher. It reported a 90 percent P.T.S.D. remission in sexual assault victims after three 90-minute sessions. The third civilian study was financed by Kaiser Permanente ([Marcus et al., 1997, 2004](#)) and reported that after an average of six 50-minute sessions, 100 percent of the single-trauma victims and 77 percent of the multiple-trauma victims no longer had P.T.S.D.

The rest of the randomized studies to date have generally continued to show substantial success rates (termed “effective” by the researcher) with mixed trauma groups.

## Placebo, Therapist and Expectation Effects

Q. Can you comment on the perception that the alleged efficacy of E.M.D.R. is due to placebo or patient expectancy effects?

eln, Vermont

Q. How have studies controlled for the effect of the caring and supportive environment that a therapist provides?

PinkFreud, California

A. **Dr. Shapiro responds:**

Several readers asked whether E.M.D.R.'s effects can be attributed to the effects of placebo, or client expectations, or perhaps to the powerful effects of the therapeutic alliance. Research studies are designed to control for and rule out these potential confounding factors by having the therapists provide two different treatments. There are currently 16 clinical trials in which E.M.D.R. was compared with other therapies. The effects of E.M.D.R. research indicate the outcome can be directly attributed to the provision of the treatment.

Some studies that examined whether patient expectations were related to outcomes did not find that expectations played any role in E.M.D.R. treatment (for example, see [Gosselin and Matthews, 1995](#)). Other clinical trials have examined the placebo effect directly; for example, one study compared E.M.D.R. with a pill placebo and found E.M.D.R. superior for those participants who completed therapy ([van der Kolk et al., 2007](#)).

Another randomized study found E.M.D.R. superior to eclectic therapy, which uses a variety of psychological approaches ([Edmonds, Rubin and Wambach, 1999](#)). An additional study that evaluated the participant's perceptions of E.M.D.R. compared with other therapies ([Edmonds, Sloan and McCarty, 2004](#)) concluded that "survivors' narratives indicate that E.M.D.R. produces greater trauma resolution, while within eclectic therapy, survivors more highly value their relationship with their therapist, through whom they learn effective coping strategies." These findings are not meant to imply that the therapeutic relationship is unimportant in E.M.D.R., but rather that E.M.D.R. emphasizes innate healing capacities that require a minimum of clinical "intrusion."

### **Comparing E.M.D.R. With Exposure Therapy**

Q. How do you respond to the numerous studies that have shown that the results from E.M.D.R. have nothing to do with the actual "eye movements" and appear to be explained by the "exposure" piece of treatment in E.M.D.R. (e.g. the story retelling)? Is E.M.D.R. (as I have always suspected) just another version of prolonged exposure using snapping, waving of hands or light bars to induce eye movements that have no clinical relevance?

Levin, San Diego

Q. I am a psychologist and have undergone E.M.D.R. My sense of it, along with a number of researchers, is that the healing component is the use of imagination (for exposure and desensitization), as a client feels their way through their fears, and that there is a lack of strong

evidence that the bilateral reprocessing is necessary.

PinkFreud, California

**A. Dr. Shapiro responds:**

First, it would be useful to describe briefly how E.M.D.R. and prolonged exposure therapy differ, for those who are unfamiliar with the therapies.

E.M.D.R. therapy is an [eight-phase treatment approach](#). During memory reprocessing, the client recalls a disturbing event for a short period (for example, 30 seconds) while simultaneously undergoing bilateral stimulation that can consist of moving the eyes from side to side, vibrations or tapping movements on different sides of the body, or tones delivered through one ear, then the other, via headphones. New associations emerge and often become the new focus of attention. No homework is required, and the client is not asked to describe the memory in detail. The goal is to let the brain's information processing system make new internal connections as the client focuses on the thoughts, emotions, memories and other associations that are freely made during the sets of bilateral stimulation.

Some exposure researchers ([Marks et al., 1998](#)) have proposed that these types of brief exposures should actually make people worse. In contrast, in prolonged exposure therapy, the client intensely focuses on describing the traumatic memory in detail, as if reliving it. The narrative is usually repeated two to three times within the therapy session, and it is recorded. The client is then assigned the homework of listening to the recording as well as engaging in in vivo exposure, which involves going to a previously avoided anxiety-provoking environment, to allow habituation to occur.

Nine randomized studies have compared E.M.D.R. therapy with various forms of cognitive behavioral therapy containing exposure therapy, with or without the addition of cognitive therapy. Meta-analyses, which pooled data from all the studies, have reported comparable effects. In all but one of the individual studies, E.M.D.R. was equal or superior (on some measures) to cognitive behavioral therapy.

The exception ([Taylor et al., 2003](#)) compared eight sessions of E.M.D.R. therapy with eight sessions of cognitive behavioral therapy. The cognitive behavioral therapy component consisted of four sessions of imaginal exposure, in which the client holds the traumatic event in mind while describing it in detail, plus four sessions of therapist-assisted in vivo exposure, in which the therapist accompanies the client to an anxiety-provoking environment, plus one hour of daily homework, totaling about 50 hours over the course of the treatment. The E.M.D.R. component used only standard therapy sessions and no homework. Cognitive behavioral therapy was superior on some measures.

Another study ([Ironson et al., 2002](#)) compared E.M.D.R. and prolonged exposure, and used in

vivo homework in both groups. It found that while both approaches resulted in substantial improvement, 70 percent of E.M.D.R. participants achieved a good outcome in three active treatment sessions, compared with 17 percent of those in the prolonged exposure group. E.M.D.R. also had fewer dropouts (none, versus 30 percent of the prolonged exposure group). Another study funded by the National Institute of Mental Health that was conducted by a well-known exposure therapy researcher ([Rothbaum et al., 2005](#)) found that both E.M.D.R. and prolonged exposure were effective, and stated: “An interesting potential clinical implication is that E.M.D.R. seemed to do equally well in the main despite less exposure and no homework. It will be important for future research to explore these issues.”

### **How Important Are Eye Movements in E.M.D.R.?**

Q. Have you been able to decisively prove that the eye movements themselves serve a true clinical role, and if so what evidence have you garnered to show this is the case?

Levin, San Diego

#### **A. Dr. Shapiro responds:**

A number of component analysis studies were conducted in the 1990s that attempted to compare E.M.D.R. with eye movements and E.M.D.R. without eye movements. A meta-analysis of these studies found no effects for the eye movements ([Davidson and Parker, 2001](#)). The International Society of Traumatic Stress Studies task force ([Chemtob et al., 2000](#)) evaluating the research included in the meta-analysis stated: “Overall, the studies reviewed here provide little support for the hypothesis that eye movements are critical to the effects of E.M.D.R. However, a final conclusion regarding this issue is precluded by methodological limitations of the various studies . . . including treatment refractory subjects, questionable adequate treatment dosage and fidelity, and limited power due to small samples.”

This area 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, and 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 R.E.M. 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.

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 the limited resources, the memory becomes less vivid, less complete and less emotional. This theory is supported by numerous randomized studies that have all shown that lateral eye movements reduce the self-rated vividness or emotional effect of unpleasant autobiographical memories (for example, Barrowcliff et al., 2003, 2004; Engelhard et al., 2010, 2011; Kavanagh, Freese, Andrade and May, 2001; Maxfield, Melnyk and 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 R.E.M. sleep is supported by research demonstrating the effects of eye movements on physiological states and memory retrieval. 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 R.E.M. sleep (Stickgold 2002, 2008). Further support for the R.E.M. 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 (for example, Christman et al., 2003, 2006; Kuiken et al., 2002; 2010; Parker, Relph and Dagnall, 2008; Parker, Buckley and Dagnall, 2009; Parker and Dagnall, 2010)

Still, controversy remains regarding why E.M.D.R. works. It's possible that both the working memory and R.E.M. theories are correct and that the mechanisms interact synergistically. We await the results of randomized controlled trials to further determine what role eye movements and other bilateral stimulation make to treatment outcome independent of the rest of E.M.D.R. procedures.

*Dr. Shapiro will be addressing additional reader questions about E.M.D.R. therapy in an upcoming post. Because of publishing and editorial schedules, additional answers will be posted in mid-March. Please check back on the Consults blog.*