The Status of EMDR Therapy in the Treatment of Posttraumatic Stress Disorder 30 Years After Its Introduction

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Given that 2019 marks the 30th anniversary of eye movement desensitization and reprocessing (EMDR) therapy, the purpose of this article is to summarize the current empirical evidence in support of EMDR therapy as an effective treatment intervention for posttraumatic stress disorder (PTSD). Currently, there are more than 30 randomized controlled trials (RCT) demonstrating the effectiveness in patients with this debilitating mental health condition, thus providing a robust evidence base for EMDR therapy as a first-choice treatment for PTSD. Results from several meta-analyses further suggest that EMDR therapy is equally effective as its most important trauma-focused comparator, that is, trauma-focused cognitive behavioral therapy, albeit there are indications from some studies that EMDR therapy might be more efficient and cost-effective. There is emerging evidence showing that EMDR treatment of patients with psychiatric disorders, such as psychosis, in which PTSD is comorbid, is also safe, effective, and efficacious. In addition to future well-crafted RCTs in areas such as combat-related PTSD and psychiatric disorders with comorbid PTSD, RCTs with PTSD as the primary diagnosis remain pivotal in further demonstrating EMDR therapy as a robust treatment intervention.

Keywords: posttraumatic stress disorder (PTSD); eye movement desensitizing and reprocessing (EMDR) therapy; randomized controlled trials; efficacy

Eye movement desensitization and reprocessing (EMDR) therapy was introduced in 1989 as a treatment for symptoms of posttraumatic stress disorder (PTSD) with the first randomized controlled trial (RCT), conducted by its developer, Francine Shapiro (1989). In the following 30 years,

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EMDR therapy has not only developed into a mature therapeutic procedure, but much research has been conducted regarding its efficacy, mainly involving the treatment of PTSD. This article aims to address the question as to what we can say, 30 years after its introduction, about the current international status of EMDR therapy when it comes to the treatment of PTSD. This question will be answered by reviewing the empirical basis of EMDR therapy regarding the treatment of PTSD in adults, children, and adolescents, by providing a brief narrative overview of the available evidence and the current recommendations of the most important international treatment guidelines.

The Status of EMDR With Regard to PTSD in Adults

Since Shapiro's first study in 1989, more than 30 RCTs have been published in which adult patients with PTSD were randomly assigned to EMDR therapy and one or more comparators. Studies where PTSD was the primary diagnosis have compared individual EMDR therapy to a *wait-list* condition (Acarturk et al., 2016; Högberg et al., 2007; Jensen, 1994; Marcus, Marquis, & Sakai, 1997; Rothbaum, 1997; Van den Berg et al., 2015, 2018) and a wide variety of active comparison conditions, including *relaxation training, with/without biofeedback* (e.g., Carletto et al., 2016; Carlson, Chemtob, Rusnak, Hedlund, & Muraoka, 1998); *imaginary rescripting* (Alliger-Horn, Zimmermann, & Mitte, 2015); *counting method* (Johnson & Lubin, 2006); *stabilization* (Ter Heide, Mooren, Van de Schoot, De Jongh, & Kleber, 2016), and *pharmacotherapy* such as fluoxetine (Van der Kolk et al., 2007) and sertraline (Arnone, Orrico, D'Aquino, & Di Munzio, 2012). There is also one study that explored EMDR therapy delivered in a group format for participants diagnosed with PTSD (Yurtsever et al., 2018). In almost all EMDR RCTs on PTSD patients, participants were civilians, whereas types of trauma (i.e., criterion A experiences) varied widely and ranged from sexual assault to accidents to life-threatening health problems.

Regarding the effectiveness, the studies that investigated EMDR treatment of PTSD reported significant decreases in PTSD symptoms, with reported reductions in PTSD diagnosis, ranging from 36% (Devilly & Spence, 1999) to 94%–95% (Capezzani et al., 2013; Nijdam, Gersons, Reitsma, De Jongh, & Olff, 2012). The same holds true for individuals who had additional other diagnoses besides their PTSD (e.g., Van den Berg et al., 2015). To this end, there is emerging evidence that also in cases of severe psychiatric disorders, such as psychosis, in which PTSD is comorbid, EMDR therapy is capable of producing stable long-term effects and large effect sizes, with good tolerability and results comparable to traumatized individuals without comorbidity (Van den Berg et al., 2015, 2018).

Comparison of EMDR Therapy With Cognitive Behavioral Therapy

In 13 RCTs EMDR therapy was compared to cognitive behavioral therapy (CBT), which, according to the World Health Organization (WHO, 2013), is another first-choice treatment for PTSD. See Table 1. In these studies the active treatment was sometimes general CBT and sometimes trauma-focused CBT (TF-CBT), which included prolonged imaginal exposure with or without *in vivo* exposure (see Table 1). Participants in these trials comprised 758 individuals with officially diagnosed (i.e., according to *Diagnostic and Statistical Manual of Mental Disorders [DSM]* or *International Classification of Diseases* [*ICD*] criteria) PTSD, and 298 of them received EMDR therapy. In 5 out of the 13 studies that compared EMDR with a variant of TF-CBT, no difference in effectiveness between EMDR therapy and TF-CBT could be detected (Johnson & Lubin, 2006; Laugharne et al., 2016; Nijdam et al., 2012; Rothbaum, Astin, & Marsteller, 2005; Van den Berg et al., 2015). However, two studies found that TF-CBT was significantly more effective than EMDR therapy (Devilly & Spence, 1999; Taylor et al., 2003), while six studies found EMDR to be more effective than CBT (Capezzani et al., 2013; Ironson, Freund, Strauss, & Williams, 2002; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; Power et al., 2002; Rogers et al., 1999; Vaughan et al., 1994).

The variety in study outcome is also reflected in the meta-analyses that have been conducted. Most meta-analyses did not show differences in effectiveness between TF-CBT and EMDR for PTSD symptoms (e.g., Bisson et al., 2013; Ehring, Morina, Wicherts, Freitag, & Emmelkamp, 2014, Gerger et al., 2014; Ho & Lee, 2012), albeit there were some exceptions (Chen, Zhang, Hu, & Liang, 2015; Khan et al., 2018). The Chen et al. (2015) meta-analysis included 11 studies ($N = 424$) and found that EMDR therapy was slightly superior to CBT. With regard to PTSD symptoms, the results suggest that EMDR might be better for intrusions and arousal severity (but not for avoidance) compared to TF-CBT. Khan et al. (2018) had slightly different inclusion criteria but also ended up with 11 studies ($n = 547$) and revealed that patients benefit more from EMDR therapy than

TABLE 1. Overview of Controlled EMDR Studies on PTSD in Adults of Which the Results Were Compared to Those of Trauma-Focused Cognitive Behavioral Therapy

Study	N (EMDR Condition)	Treatment	Number of Treatment Sessions	Main Result	Percentage Loss of Diagnosis EMDR Patients[a]
Vaughan et al. (1994)	36 (12)	• EMDR • *IHT* • R • W	4	EMDR = IHT = R > W EMDR > IHT, R (regarding intrusions)	48
Devilly and Spence (1999)	23 (11)	• EMDR • *TTP*	9	EMDR < TTP also at 3-month follow-up	36
Rogers et al. (1999)	12 (6)	• EMDR • *PE*	1	EMDR = PE EMDR > PE (regarding intrusions)	Not reported
Ironson et al. (2002)	22 (10)	• EMDR • *PE*	4	EMDR > PE also at 3-month follow-up	Not reported
Lee et al. (2002)	23 (10)	• EMDR • *PE + SIT*	8	EMDR = E+SIT EMDR > E+SIT (regarding intrusions) also at 3-month follow-up	83
Power et al. (2002)	105 (27)	• EMDR • *PE + CR*	4.2 6.4	EMDR = PE+CR also at 15-month follow-up	Not reported
Taylor et al. (2003)	60 (15)	• EMDR • *PE* • *R*	8	EMDR = PE = R EMDR + R < PE (regarding avoidance and re-experiencing)	60
Rothbaum et al. (2005)	74 (20)	• EMDR • *PE* • W	9	EMDR = PE > W	75
Johnson and Lubin (2006)	27 (9)	• EMDR • *PE* • *CM* • W	6.3 9.7 5.9	EMDR = PE = CM	Not reported
Nijdam et al. (2012)	140 (70)	• EMDR • BEP	16	EMDR = BEP EMDR more efficient	94
Capezzani et al. (2013)	21 (21)	• EMDR • CBT	8	EMDR > CBT	95

(*Continued*)

TABLE 1. Overview of Controlled EMDR Studies on PTSD in Adults of Which the Results Were Compared to Those of Trauma-Focused Cognitive Behavioral Therapy (*Continued*)

Study	N (EMDR Condition)	Treatment	Number of Treatment Sessions	Main Result	Percentage Loss of Diagnosis EMDR Patients[a]
Van den Berg et al. (2015)	155 (55)	• EMDR • *PE* • TAU	8	EMDR = PE > TAU	60
Laugharne et al. (2016)	20 (10)	• EMDR • *PE* • 12		EMDR = PE	Not reported

Note. BEP = brief eclectic psychotherapy; CBT = cognitive behavioral therapy; CM = counting method; CR = cognitive restructuring; IHT = image habituation training; PE = prolonged exposure; R = relaxation; TTP = trauma treatment protocol; SIT = stress inoculation training; TAU = treatment as usual; W = waiting list; > indicates "significantly superior to"; < indicates "significantly inferior to."
[a]Based upon clinical interview.

from CBT when the reduction of the three primary symptom clusters of PTSD is concerned. However, 3 months follow-up analysis on four of these studies (n = 186) showed that this differential effect was no longer significant. In addition, the meta-analysis of Ho and Lee (2012) evaluated six studies that also investigated depression outcomes and found a large effect size, suggesting that EMDR therapy may be more advantageous for PTSD patients in case of comorbid .

While a number of meta-analyses have been published that report large effect sizes, both with regard to the effectiveness of EMDR therapy itself and the efficacy of EMDR in comparison with other therapies, it should be noted that some studies suffered from poor methodology. In their 2002 analysis, Maxfield and Hyer (2002) identified lack of treatment fidelity (e.g., Jensen, 1994), non-blinding of assessors (e.g., Lee et al., 2002), and inadequate randomisation processes (e.g., Devilly & Spence, 1999) as common deficits in the EMDR literature. Such methodological issues reduce the confidence in the robustness of the scientific support for EMDR and have impacted the recommendations made by some treatment guidelines. For example, American Psychological Association (APA, 2017) was less positive in their recommendations regarding EMDR therapy, stating "There is low strength of evidence of a medium to large magnitude benefit for the critical outcome of PTSD symptom reduction," APA, 2017, p. 42. (See also Dominguez & Lee, 2017, 2019)

The Status of EMDR With Regard to PTSD in Children and Adolescents

The efficacy of EMDR therapy has also been studied in children and adolescents. A number of RCTs have been conducted with children and adolescents with trauma-associated symptoms, showing significant reductions in presenting problems. Details can be seen in recent reviews (Barron, Bourgaize, Lempertz, Swinden, & Smith, 2019; Beer, 2018) and a meta-analysis (Moreno-Alcazar et al., 2017). Only four RCTs (n = 216 in total) have been conducted with EMDR (n = 145) and one or more control conditions (three used a wait-list control condition) for children and adolescents that were formally diagnosed with PTSD (Ahmad, Larsson, & Sundelin-Wahlsten, 2007; Chemtob, Nakashima, & Carlson, 2002; De Roos et al., 2017; Diehle, Opmeer, Boer, Mannarino, & Lindauer, 2015; see Table 2). The results of these four studies suggest that EMDR therapy is superior to wait-list control conditions, at least equally effective in reducing PTSD symptoms compared to TF-CBT (see also De Roos, Rommelse, Knipschild, Bicanic, & De Jongh, 2019), while one study found EMDR therapy to be more efficient (De Roos et al., 2017; see "Discussion" section). A large proportion, ranging from 45% (Diehle et al., 2015) to 93% (De Roos et al., 2017), did not fulfill the diagnostic criteria immediately following treatment.

Of note is that the quality of these studies on EMDR pertaining to PTSD in children and adolescents

show some limitations. For example, half of the studies presented in Table 2 lacked follow-up assessments (Ahmad et al., 2007; Diehle et al., 2015), and only half of the studies reported on loss of PTSD diagnoses. Therefore, while the existing research shows promise, these methodological problems, and the small number of studies on the effectiveness of EMDR regarding children with PTSD, limit the confidence that can be placed in making strong statements. As discussed in the next section, these issues also explain why some published guidelines have been circumspect so far on the efficacy of EMDR in this target group.

EMDR Therapy and the Treatment Guidelines

As highlighted earlier, WHO recommended EMDR therapy—in addition to TF-CBT—as a first-choice treatment for PTSD (WHO, 2013). The recent guidelines released by the US Department of Veterans Affairs in collaboration of the Department of Defense (Department of Veterans Affairs and the Department of Defense, 2017) and the International Society of Traumatic Stress Studies (ISTSS Guidelines Committee, 2018) recommend EMDR therapy along with a series of variants of CBT therapy, particularly prolonged exposure (i.e., imagery and in vivo) as first-line treatments for PTSD, for both adults and children. In contrast, the new treatment guideline of the APA (2017) gave EMDR therapy a conditional recommendation and a lower rating than CBT (see Table 3). Although the National Institute for Health Care and Care Excellence (NICE, 2018) recommended EMDR therapy for adults after 3 months post-trauma, they placed restrictions on its use with children and adolescents with early trauma, and for those with combat-related trauma. They stated, "The evidence suggested EMDR was not effective in people with military combat-related trauma, and this is in contrast to all other included trauma types for which benefits were observed" (NICE, 2018).

Table 1 shows the 13 studies that compared EMDR to CBT in treating adults with an officially established PTSD diagnosis, while Table 2 shows the four studies that compared EMDR to CBT in treating children. Of the 13 adult studies, 9 were included in the guidelines published by the WHO (2013), 2 in the APA (2017), 7 in NICE (2018), and 12 in the ISTSS (2018) treatment guidelines.

TABLE 2. Overview of RCTs (Any Control Condition) on EMDR for PTSD in Children and Adolescents

Study	*N*	Treatment	Number of Treatment Sessions	Percentage Loss of Diagnosis EMDR Patients Immediately After Treatment[a]	Main Results
Ahmad et al. (2007)	33 (17)	• EMDR • WL	8	Not reported	EMDR > WL
Chemtob et al. (2002)	32 (32)	• EMDR • WL/delayed treatment	3	Not reported	EMDR > WL
Diehle et al. (2015)	48 (25)	• EMDR • TF-CBT	8	45	EMDR = TF-CBT
De Roos et al. (2017)	103 (54)	• EMDR • CBWT • WL	4	93	EMDR, CBWT> WL EMDR = CBWT EMDR > CBWT (regarding efficiency) Result maintained at 3-month and 1-year follow-up

Note. CBWT = cognitive behavioral writing therapy; PTSD = posttraumatic stress disorder; RCT = randomized controlled trial; TF-CBT = trauma-focused cognitive behavioral therapy; WL = waiting list; > indicates "significantly superior to"; < indicates "significantly inferior to."
[a]Based upon clinical interview.

TABLE 3. Overview of the Most Recent Treatment Guidelines Recommending EMDR Therapy

Guideline	Target Group	Year	Recommendation
WHO	Adults	2013	"Should be considered" with moderate quality of evidence
WHO	Youth	2013	"Should be considered" with low quality of evidence
Veterans Affairs and US Department of Defense	Adults	2017	Recommendation with strong evidence
APA	Adults	2017	"Suggested," but not recommended
NICE	Youth	2018	Only if they do not respond to or engage with trauma-focused CBT
NICE	Adults	2018	During months 2 and 3 post-trauma, "Consider EMDR" after a non-combat-related trauma if the person has a preference for EMDR. EMDR is recommended for treatment more than 3 months after a non-combat-related trauma.
ISTSS	Adults	2018	Strong recommendation
ISTSS	Youth	2018	Strong recommendation

Note. APA = American Psychological Association (APA, 2017); CBT = cognitive behavioral therapy; ISTSS = International Society of Traumatic Stress Studies (2018); NICE = National Institute for Health Care and Care Excellence (NICE, 2018); WHO = World Health Organization (WHO, 2013).

Inconsistencies Between the Different Treatment Guidelines

At this present moment there is a striking lack of consistency between international treatment guidelines for PTSD—raising the question as to why this may be the case.

There are several factors to consider. Firstly, while sometimes it is simply not clear which studies formed the basis of the treatment recommendation (e.g., VA/DOD, 2017), the authors of most of the guidelines used different inclusion and exclusion criteria (i.e., scoping question) for the studies selected for their respective systematic literature searches, which then impacted their subsequent meta-analyses and final recommendations. For instance, the authors of the NICE (2018) and ISTSS (2018) guidelines, in their assessment, excluded studies in which participants with PTSD had severe psychiatric comorbidities. This led, for example, to the exclusion of the largest EMDR outcome study on PTSD that has been carried out to date (Van den Berg et al., 2015, 2018, $n = 155$), as the participants suffered from a psychotic disorder in addition to their PTSD. The same study was also excluded in the meta-analysis underlying the APA guidelines, as they included only RCTs for their analysis that had been conducted before 2012 (5 years prior to the date that the guidelines were issued). If this study would have been included in this meta-analysis, conducted for APA, this probably would have led to a recommendation similar to that for TF-CBT. In the comments to feedback on the first draft of the guideline, the APA guideline committee wrote, "The panel decided to maintain its conditional recommendation for EMDR, with the caveat that there is greater uncertainty about this recommendation than for other recommendations and with future meta-analysis the recommendation could be strong" (APA, 2017, p. 57).

The guidelines also handled the methodological limitations differently. For example, NICE excluded studies with small sample sizes, ISTSS removed studies with too few sessions, and APA removed studies with methodological limitations, viewed as "high risk of bias."

Conclusion

Regarding the status of EMDR therapy 30 years after its introduction, we can conclude that, with regard to PTSD, EMDR therapy can be used as an intervention of first choice because there is sufficient scientific support for its efficacy. Although some studies have found no difference in the efficiency of EMDR and TF-CBT for symptoms of PTSD (e.g., Diehle et al., 2015), there are indications suggesting that EMDR therapy may require fewer sessions than CBT (De Roos et al., 2011; Jaberghaderi, Greenwald, Rubin, Zand, & Dolatabadi, 2004; Nijdam et al., 2012). This notion is most strongly supported by the results of a study in which the researchers clocked the duration of the trauma treatments using a stopwatch, thereby showing that patients who received EMDR therapy lost their PTSD diagnosis significantly faster than CBT

(2 hours and 20 minutes versus 3 hours and 47 minutes; De Roos et al., 2017).

EMDR's possible efficiency advantage would suggest cost savings compared to treatment with TF-CBT. This hypothesized cost differential was directly tested in one study that investigated the health-economic benefits of treatment with EMDR therapy. Results suggest that adding EMDR treatment to standard care for individuals with PTSD (in case psychosis is comorbid) would yield higher savings than adding TF-CBT (-1574 Euro and -422 Euro per patient per 6 months, respectively; De Bont et al., 2019).

What is needed for EMDR therapy to ensure that it will continue to be recommended as a first-line therapy in future PTSD treatment guidelines? There are some categories of traumatic events for which the scientific evidence of EMDR therapy is still weak compared to CBT. This includes combat-related PTSD and children with PTSD. Given that the systematic reviews identified only a few large RCTs and significant statistical heterogeneity, improving the quality of EMDR research remains an important issue to flag. It is clear that the empirical groundwork of EMDR therapy based on RCTs in this area is still rather weak and more studies are needed.

In conclusion, EMDR therapy is generally considered to be an evidence-based therapy that can be applied for both adults and children in the case of PTSD. Of note, future well-crafted RCTs in areas such as combat-related PTSD and psychiatric disorders with comorbid PTSD are warranted. Furthermore, RCTs where PTSD is a primary diagnosis also remain necessary to ensure that in the future, treatment guidelines EMDR therapy will continue to be recommended as a first-line therapy for PTSD.

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