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Is EMDR an evidenced-based treatment for depression? A review of the literature.

Emily Wood, MMedSci RMN,
Postgraduate Researcher
School of Health and Related Research (SchARR)
University of Sheffield
30 Regent Street
Sheffield
S1 4DA

e.f.wood@sheffield.ac.uk

Phone: +44 (0) 7981 808790

Thomas Ricketts, PhD RMN
Nurse Consultant in Psychotherapy
Sheffield Health and Social Care NHS FT
Fulwood House
Old Fulwood Road
Sheffield S10 3TH

And School of Health and Related Research (SchARR)

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Is EMDR an evidenced-based treatment for depression? A review of the literature.

Abstract

It is not unusual for proponents of EMDR to claim it can be used to treat a great many mental health problems. Depression is an illness that affects the lives of millions across the world; the costs are high, economically and socially, and depression can be devastating for the individual. Despite this, depression is not well treated, so a desire to find other treatments is admirable. However, these treatments must be evidence based and while there is some evidence that EMDR may be a promising new approach, it cannot currently be described as an evidenced-based treatment for depression. There are studies under way across Europe that may produce the evidence needed to expand the recommendations for using EMDR with more than just post traumatic stress disorder.

Key Words EMDR, depression, literature review

Introduction

Depression is a common mental health disorder; at any one time approximately ten percent of people in the UK meet the criteria for a depressive episode (Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2003). Depression is thought to be the fourth leading cause of disease burden in the world (Üstün, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004). It is characterized by low or sad mood and loss of interest and pleasure for at least two weeks. It may be accompanied by changes in appetite, sleep, loss of energy, inability to concentrate, feelings of worthlessness and guilt and recurrent thoughts of death (APA, 2003). There is an excess mortality linked to depressive disorder (Laursen, Munk-Olsen, Nordentoft, & Mortensen, 2007), and it accounts for 12% of the total years lived with disability (Üstün et al., 2004). Although depression is often considered an acute illness that will last on average four months untreated (APA, 2003), around 60% of people suffering a first episode of major depressive disorder (MDD) will go on have a second (Solomon et al., 2000), and the risk of relapse and recurrence increases with each episode. Up to 20% of all depressed patients have a chronic course (Klein and Santiago, 2003). The economic and personal costs of chronic depression are high (Robinson, Berman, & Neimeyer, 1990). Patients with chronic depression use up to twice as many medical services as non-depressed patients, and have higher rates of suicide and hospital admission than acutely depressed patients (Arnou and Constantino, 2003). People with chronic depression tend to have experienced more adversity in early life (Riso & Newman, 2003).

Eye Movement Desensitization and Reprocessing (EMDR) is a comprehensive psychotherapy approach (Shapiro & Laliotis, 2011). It was developed by Francine Shapiro (1995) to treat the victims of trauma. It uses bilateral stimulation, e.g. taps, tones or eye movements, which aim to stimulate the information processing system of the brain in combination with other methods of established psychotherapies with known effectiveness (Shapiro, 1995). The theoretical model behind EMDR is the adaptive information processing (AIP) model; this was developed alongside EMDR as a treatment for Post Traumatic Stress Disorder (PTSD). The AIP model claims that mental pathology is caused by incorrectly processed memories getting 'stuck' in an emotional and vivid state. It is suggested that

EMDR alleviates pathology by helping the client to reprocess these memories so they are no longer traumatic (Shapiro, 1995).

Aim

It is frequently posited that EMDR can be used to treat many mental health problems. This is especially true in the books designed to guide EMDR practitioners (Manfield, 1998b; F. Shapiro & Forrest, 2004; R. Shapiro, 2005, 2009b). However although EMDR is widely accepted as an effective treatment for PTSD (NICE, 2005) it is not officially recommended for more general usage. The aim of this literature review is to determine whether there is sufficient research evidence to support claims that EMDR can and should be used to treat depression.

Method

To review the literature on EMDR and depression two databases were searched systematically. Medline was searched for the terms ‘EMDR OR eye movement desensitization and reprocessing AND depression’. The search term ‘desensitization’ was used to ensure that both the British spelling (desensitisation) and American spelling (desensitization) were included in the results. The Francine Shapiro library maintained by the Northern Kentucky University was also searched for the term ‘depression’. The Francine Shapiro library is a comprehensive database of journals, grey literature publications and conference presentations on EMDR. It contains entries in many languages. Grey literature is defined by the Luxemburg Convention as that which “is produced on all levels of government, academics, business and industry but is not controlled by commercial publishers and includes conference abstracts, research reports, book chapters, unpublished data, dissertations, policy documents and personal correspondence (Hopewell, McDonald, Clarke, & Egger, 2007).” The reference lists of relevant papers were hand searched to ensure no publications had been missed.

Results

The Medline search provided 24 hits, the Shapiro library provided 83, of which 37 were discounted as they were conference presentations or newspaper articles. By reading the remaining titles, abstracts and references, 37 suitable references were found. Non-English language papers were not automatically discounted but information regarding depressive symptoms had to be included in the English abstract. One non-peer reviewed journal (EMDR Network Newsletter) and one article (Healthyplace.com) had to be excluded as they were internet based and access was no longer available. Nineteen of the journal articles which reported interventions for PTSD considered comorbid depressive symptoms as well. One article on phantom limb pain also did so. Of these 19 articles, 15 were in English, three in French and one in Persian (Farsi). They included six randomized controlled trials (RCT), three pilot RCTs, one random logged groups study, one case control study, and eight case studies (including the phantom limb pain study). Eighteen references reported interventions for depression as a primary diagnosis, eight in journal articles and ten in books; fifteen were in English, with one Dutch book and two Chinese journal articles. The books all reported clinical anecdotes and case studies and the journal articles contained six case studies, one RCT and one pilot RCT.

PTSD with Comorbid Depression

Numerous studies reporting the use of EMDR for PTSD and phantom limb pain have noted improvements in comorbid depression scores during treatment (Korn & Leeds, 2002; Maxfield & Hyer, 2002; Schneider, Hofmann, Rost, & Shapiro, 2008; van der Kolk et al., 2007) these studies are summarized in Table 1. When treating PTSD with EMDR, comorbid depression improves in almost all cases and EMDR appears to be better at treating this than imaginal exposure (Arabia, Manca, & Solomon, 2011), waiting list controls (Hogberg et al., 2007; B. O. Rothbaum, 1997), standard care (Marcus, Marquis, & Sakai, 1997), fluoxetine or placebo pills (van der Kolk et al., 2007). Other studies have also reported significant improvements in comorbid depression where treatment with EMDR was at least as effective as, but not significantly different from, cognitive behavioral therapy (CBT) (Narimani, Ahari, & Rajabi, 2010) or prolonged exposure (Ironson, Freund, Strauss, &

Williams, 2002; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; Rothbaum, Astin, & Marsteller, 2005). Only one RCT found that comorbid depression did not improve when PTSD was treated with EMDR, relaxation or biofeedback (Silver, Brooks, & Obenchain, 1995). All of the case studies and case series found an improvement in depressive symptoms when PTSD was successfully treated with EMDR (Chemtob, Nakashima, & Carlson, 2002; Korn & Leeds, 2002; Lobenstine & Courtney, 2013; Montefiore, Mallet, Levy, Allilaire, & Pelissolo, 2007; Raboni, Tufik, & Suchecki, 2006; Schneider et al., 2008; Steven M. Silver, Rogers, & Russell, 2008; Tarquinio, Schmitt, & Tarquinio, 2011; Tarquinio, Schmitt, Tarquinio, Rydberg, & Spitz, 2011). Although each case study on its own is not generalizable due to the nature of the experimental design, the growing number of such reports adds weight to the premise that, in people with PTSD, comorbid depression can be alleviated by treatment with EMDR.

All ten of the controlled trials, pilot RCTs and the ABA controlled study were reviewed with respect to quality assessments using the Critical Appraisal Skills Program (CASP) RCT checklist and the Cochrane Collaboration tool for assessing the risk of bias. The results of this review are summarized in Table 2.

As is often the case in EMDR research, the quality of studies varies. In a review of the controlled treatment outcome studies, Maxfield and Hyer (2002) highlight the need to maintain high standards of research in order to truly evaluate the EMDR method. This is necessary because there appears to be “a high correlation between methodology and outcome. As methodology became more rigorous, the treatment effect became larger (Maxfield & Hyer, 2002).”

In this review, none of the papers reported power or sample size calculations being done before the study took place to determine recruitment numbers and, as such, many could be argued to be underpowered, although only one (Lee et al., 2002) mentions this as a potential limitation. Sample sizes ranged from 18 (Rothbaum, 1997) to 88 (van der Kolk et al., 2007). Lack of power is not necessarily the case, however; Marcus (1997) had 67 participants over two arms, which, considering the effect sizes expected appears reasonable. Without a statistical sample size calculation one cannot be sure, and the standard care treatment in that study was extremely variable. Two studies call themselves pilots (Arabia et al., 2011; Ironson et al., 2002) so here a small sample size is to be expected.

Despite a general problem of small sample sizes the papers by the Arabia, Chemtob, Hogberg, Ironson, van der Kolk, and Lee research groups are high quality. The papers are missing the occasional piece of information, such as attrition (Chemtob et al., 2002), equal treatment of the groups (Hogberg et al., 2007), homogeneity of the groups (Ironson et al., 2002) and failure to treat both groups the same during the treatment phase (van der Kolk et al., 2007), but overall there are few concerns about the reports. As is often the case when psychotherapy is compared to a medication regime, in the study by van der Kolk and colleagues, participants in the different groups received different amounts of input from professionals. Participants in the EMDR arm had eight weekly 90 minute sessions whereas the medication and placebo groups only received 20 minute sessions. However, both Rothbaum papers suffer from a lack of homogeneity between the groups. In the early paper Rothbaum's waiting list group was significantly more depressed than the EMDR group and in the 2005 paper the EMDR group had more severe PTSD than the waiting list or prolonged exposure groups. Marcus' paper from 1997 may be poorly written, or maybe of low quality. Initial homogeneity of the groups is not reported, neither is attrition, although exclusion criteria are. There is no clearly focused research question reported, assessors were not blind to participant group allocation and the groups were not treated the same. The Silver et al (1995) paper raises some serious concerns because participants choose their treatment group and there were 83 clients split unequally over 4 groups, with one group only containing 6 people. There is no clearly focused research question reported and the groups were not treated the same, the EMDR group had as little as one therapy session over a three month inpatient stay. The other two treatment groups received at least 3 sessions. Exclusion criteria, attrition, homogeneity, blinding of assessors and confidence intervals and standard deviations are also not reported.

To report depression symptoms seven papers used the Beck Depression Inventory (BDI), one used the Hamilton Rating Scale for Depression (HRSD) (Hogberg et al., 2007), one used the Children's Depression Inventory (CDI) (Chemtob et al., 2002) and one did not report the scales used (Silver et al., 1995).

Depression as a Primary Diagnosis

Of the eight journal articles that focused on the treatment of a primary diagnosis of depression, six were case studies which cover a variety of demographics in individuals whose depression ranges widely in severity. Publications regarding the use of EMDR to treat a primary diagnosis of depression are summarized in Table 3.

A report of two case studies using EMDR with Korean adolescents with mild/moderate depression had impressive results (Bae, Kim, & Park, 2008). In Mexico, three people with mild/moderate depression had a full remission of symptoms in an average of 12 sessions. As expected the negative images, beliefs, emotions and sensations associated with traumatic events ceased to be distressing and the participants recovered from their depression. EMDR was also reported to have a positive effect on the cognitive processing of emotional material and on conceptual organization in long term memory storage (Rosas Uribe, Lopez Ramirez, & Jarero Mena, 2010). In the U.S.A., an adult patient with severe depression was treated successfully over three months with EMDR (Grey, 2011) and an adult with depression and ADHD since childhood recovered enough to stop taking his medication for both conditions (Broad & Wheeler, 2006). An elderly Chinese man with depression due to physical health problems and a fear of surgery was successfully treated with an intensive combination of EMDR to address his fear and mindfulness meditation over a two week inpatient stay (Sun, Wu, & Chiu, 2004). All these examples focused on acute phase depression and, as they are case studies, could not control for the passage of time or other factors associated with recovery.

Only one study has reported the treatment of a client with chronic depression. Chronic depression is usually treatment resistant, 10-20% of adequately treated patients with acute depression will continue to have symptoms for at least two years (NCCMH, 2010) and there is evidence to suggest that some forms of psychotherapy may be less affective at treating this form of the illness (Cuijpers et al., 2010). A severely and chronically depressed woman in India was treated with EMDR after she experienced strong negative reactions to antidepressant medication. After nine treatment sessions her depression was reported to be “completely cured” and this was maintained at six month follow-up (Srivastavpa & Mukhopadhyay, 2008).

No randomized controlled studies could be found that were published in full in English looking at using EMDR with a primary diagnosis of depression. Hogan (2001) conducted a small scale trial for a PhD thesis but the full report does not appear to have been published. From the abstract it appears that in the first four sessions of treatment adult participants with a diagnosis of depression received one session of either CBT or EMDR. There were only 15 participants per arm and the abstract does not indicate what was done in the other three sessions. There was no statistically significant difference in the responses of the two groups, although it is reported that four of the EMDR group reported “near complete remission of symptoms” and that participants perceived EMDR to be “less negative than CBT (Hogan, 2001).” It is difficult to make a judgment of quality as only the abstract is available for this study, but it makes no mention of randomization methods and the study was probably very underpowered with only 15 people per treatment arm. The method is specific about the amount of therapeutic intervention that both arms received and it seems unlikely that only one session of either treatment would cause large changes in symptoms, especially as many of the case studies report time scales of three to six months (Bae et al., 2008; Grey, 2011; Rosas Uribe et al., 2010).

A larger trial was conducted in China comparing clients with depression who were taking sertraline to those who were taking sertraline and had additional treatments of EMDR (Song & Wang, 2007). Here 64 patients (32 per arm) were randomly allocated to treatment group for a six week period. At the end of this period both groups had improved significantly but there was no significant difference between the two. In earlier weeks in the trial there was significant difference with the EMDR and sertraline group doing better than the sertraline alone group. The authors conclude that “sertraline combined with EMDR takes effect faster and has higher safety and better compliance in the treatment of depression (Song & Wang, 2007).” However, only the abstract is available in English and adverse effects and compliance issues are not sufficiently addressed. Again, the lack of a full paper makes a judgment with regard to the quality of the research difficult.

Several books and book chapters are devoted to how EMDR can be expanded beyond just a treatment for PTSD. These are often written by EMDR professionals using examples from their clinical experience. Five books, containing 10 relevant chapters, have been published between 1998

and 2013 that report examples of EMDR being used to treat depression (Knipe, 2009; Manfield, 1998a, 1998c; Oppenheim, 2009; Servan-Schreiber, 2004; F. Shapiro & Forrest, 2004; R. Shapiro, 2009a, 2009c, 2009d, 2009e). All except one (which describes the process and how it can help depression without the need for medication or other psychotherapies (Servan-Schreiber, 2004)) demonstrate the treatment of depression by clinical example. This is helpful to EMDR practitioners and these chapters provide additional examples of clinical case studies to suggest that EMDR may indeed be an effective treatment option for depression. However, unlike the case studies in journals, the grey literature does not commonly report standardized symptom scales to demonstrate efficacy. It, instead, relies on process measures during EMDR, i.e., subjective units of disturbance (SUDs) and validity of cognition (VoC). This makes it more difficult to compare the case studies in books to the ones in the peer reviewed literature. In addition, some of these books fail to give a scientific rationale for the treatment. Others, which do give a rationale, have not been peer reviewed, so its relevance and accuracy may be in doubt. Knipe (2009) outlines the way the adaptive information processing model (AIP) (Shapiro & Forrest, 2004; Solomon & Shapiro, 2008) relates not just to PTSD but also to depression and gives examples of using EMDR to treat shame-based depression. R Shapiro (2009c) goes further and links the AIP model to the vagus nerve theory. However, this link appears tenuous. Although she uses six publications to portray the vagus nerve theory as a near certainty, only one of these has been peer reviewed. She makes no attempt to explain how AIP, which is in essence a cognitive learning theory, relates to the vagus nerve theory.

At the EMDR UK&I National Workshop in 2012, Hofmann presented work he and his colleagues are currently undertaking in Germany. Hofmann presented a pilot study using a matched pairs design of German inpatients (14 recurrent depression, 12 single episode) compared treatment as usual (TAU - psychodynamic therapy and medication) to TAU plus four or five sessions of EMDR. That study found that the TAU + EMDR group did significantly better than the TAU group. A second pilot study on German outpatients with depression (12 recurrent, 12 single episode) comparing CBT with CBT + five sessions of EMDR is still running.

The latest project starting in 2012 is the EDEN (European Depression and EMDR Network) RCT, which will involve patients from six European countries with recurrent depression, randomly

assigned to medication alone, EMDR and medication, or CBT and medication. This study has a recruitment target of 350 participants. The study will use the standard EMDR protocol and will measure improvement using the Beck Depression Inventory II (Beck, Steer, & Brown, 1996) and social functioning scores. Clients will also be followed up at five years to look at long term gains and relapse prevention. Currently none of this work has been published (Hofmann, 2012). Although this work has been reported at conferences, the lack of publications in peer reviewed journals means that tests of quality cannot be undertaken.

The present author is currently engaged in an intensive clinical replication series treating people with long term depression with EMDR. The Sheffield EMDR and Depression Investigation (SEDI) aims to see if these clients respond to EMDR not only with an improvement in depressive symptoms but also in social functioning. The study will also investigate whether the participants respond in the same ways that PTSD patients have responded, with changes in memory narrative, heart rate variability and skin conductance response. Finally, SEDI will interview participants to elicit information about the experience of having EMDR for depression (Wood, 2012).

Summary

In summary, the PTSD studies that have been reported have usually found that EMDR significantly reduces comorbid depression along with PTSD symptoms. However, this does not tell us if EMDR is directly responsible for the reduction in depression or if it is merely a by-product of the reduction in PTSD. As no study has attempted to answer this question it cannot be claimed that EMDR treats depression, however the case does seem strong to claim that EMDR is effective in treating depression when it is found comorbidly with PTSD.

Studies on the use of EMDR with clients with a primary diagnosis of depression are lacking. To date, there is no full RCT published in English. Case studies abound in the peer reviewed and grey literature, and they suggest EMDR may be a useful approach to add to standard treatments for depression. At most it can be concluded that EMDR has the potential to treat cases of primary depression, but it is not currently an evidenced based treatment.

There is also a lack of explanation to link the adaptive information processing model to the treatment of depression. The AIP model considers negative behaviors and thoughts to be the result of dysfunctionally held information (Solomon & Shapiro, 2008). This is consistent with cognitive theories of depression but much of the language of the AIP is centered on the pathology of PTSD because the AIP model developed alongside EMDR. Thus, it initially developed as a theory on the causes and treatment of traumatic stress.

Conclusions

The research on EMDR is highly variable; there are case studies and RCTs of differing levels of quality from all over the world, in different settings and with vastly different patient groups of all ethnicities and age groups. From the accumulated case studies and unpublished pilot studies that have taken place it would appear that it is possible to use EMDR to treat depression successfully, but its specific efficacy is unknown. The practice based evidence suggests that EMDR has the potential to be an evidenced based treatment for depression. EMDR has been reported to reduce rumination in patients with traumatic grief (Sprang, 2001), however, further research is required to determine if EMDR can add anything to the current psychotherapeutic approaches and to investigate the theoretical processes behind EMDR as a treatment for any psychiatric distress. More work is also required on how EMDR works so that the AIP model can be confidently expanded beyond PTSD. Some of the work currently underway may be able to shed light on these questions. The SEDI project aims to intensely study a few participants to not only see if their depression responds to treatment with EMDR but also in what way, and to uncover more information about the patient experience. The work of the EDEN trial should bring some insight into the comparative effectiveness of EMDR, CBT and medication. If it can recruit to its target it will be a very large trial which has the potential to produce conclusive results with regards to the efficacy of EMDR as a treatment for long term depression. This remains an important issue because although medication and CBT are the recommended treatments for depression, CBT only has a recovery rate of around 50% (Ekers, Richards, & Gilbody, 2008) and the relapse rate among those treated with antidepressants is high (Gloaguen, Cottraux, Cucherat, &

Ivy-Marie, 1998). Any additional treatment that can be effective in treating depression will bring significant health and social benefits as it is such a widespread and costly illness (Arnow & Constantino, 2003). EMDR may be such a treatment.

References

- Arabia, E., Manca, M. L., & Solomon, R. M. (2011). EMDR for Survivors of Life-Threatening Cardiac Events: Results of a Pilot Study. *Journal of EMDR Practice and Research*, 5(1), 2-13.
- Arnow, B. A., & Constantino, M. J. (2003). Effectiveness of psychotherapy and combination treatment for chronic depression. *Journal of Clinical Psychology*, 59(8), 893-905.
- Bae, H., Kim, D., & Park, Y. C. (2008). Eye movement desensitization and reprocessing for adolescent depression. *Psychiatry Investigation*, 5(1), 60-65.
- Beck, A., Steer, R., & Brown, G. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological corporation.
- Broad, R. D., & Wheeler, K. (2006). An adult with childhood medical trauma treated with psychoanalytic psychotherapy and EMDR: a case study. *Perspectives in Psychiatric Care*, 42(2), 95-105.
- Chemtob, C. M., Nakashima, J., & Carlson, J. G. (2002). Brief treatment for elementary school children with disaster-related posttraumatic stress disorder: a field study. *Journal of Clinical Psychology*, 58(1), 99-112.
- Cuijpers, P., van Straten, A., Schuurmans, J., van Oppen, P., Hollon, S. D., & Andersson, G. (2010). Psychotherapy for chronic major depression and dysthymia: A meta-analysis. *Clinical Psychology Review*, 30(1), 51-62. doi: 10.1016/j.cpr.2009.09.003
- Ekers, D., Richards, D., & Gilbody, S. (2008). A meta-analysis of randomized trials of behavioural treatment of depression. *Psychological Medicine*, 38(5), 611-624.
- Gloaguen, V., Cottraux, J., Cucherat, M., & Ivy-Marie, B. (1998). A meta-analysis of the effects of cognitive therapy in depressed patients. *Journal of Affective Disorders*, 49(1), 59-72. doi: 10.1016/s0165-0327(97)00199-7
- Grey, E. (2011). A Pilot Study of Concentrated EMDR: A Brief Report. *Journal of EMDR Practice and Research*, 5(1), 14-24. doi: 10.1891/1933-3196.5.1.14
- Hofmann, A. (2012). *EMDR and Chronic Depression*. Paper presented at the EMDR UK&I National Workshop and AGM, London, UK.
- Hogan, W. (2001). The comparative effects of eye movement desensitization and reprocessing (EMDR) and cognitive behavioural therapy (CBT) in the treatment of depression. *Dissertation Abstracts International*, 62(2-B), 1082.
- Hogberg, G., Pagani, M., Sundin, O., Soares, J., Aberg-Wistedt, A., Tarnell, B., & Hallstrom, T. (2007). On treatment with eye movement desensitization and reprocessing of chronic post-traumatic stress disorder in public transportation workers--a randomized controlled trial. *Nordic Journal of Psychiatry*, 61(1), 54-61.
- Hopewell, S., McDonald, S., Clarke, M., & Egger, M. (2007). Grey literature in meta-analyses of randomized trials of health care interventions. *Cochrane Database Syst Rev*, 2(2).
- Ironson, G., 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(1), 113-128.
- Knipe, J. (2009). Shame is my safe place": Adaptive information processing methods of resolving chronic shamebased depression. *EMDR solutions II: For depression, eating disorders, performance, and more*, 49-89.

- Korn, D., & Leeds, A. (2002). Preliminary evidence of efficacy for EMDR resource development and installation in the stabilization phase of treatment of complex posttraumatic stress disorder. *Journal of clinical psychology*, 58(12), 1465-1487.
- Laursen, T. M., Munk-Olsen, T., Nordentoft, M., & Mortensen, P. B. (2007). Increased mortality among patients admitted with major psychiatric disorders: a register-based study comparing mortality in unipolar depressive disorder, bipolar affective disorder, schizoaffective disorder, and schizophrenia. *Journal of Clinical Psychiatry*, 68(6), 899-907.
- Lee, C., Gavriel, H., Drummond, P., Richards, J., & Greenwald, R. (2002). Treatment of PTSD: stress inoculation training with prolonged exposure compared to EMDR. *Journal of Clinical Psychology*, 58(9), 1071-1089.
- Lobenstine, F., & Courtney, D. (2013). A Case Study: The Integration of Intensive EMDR and Ego State Therapy to Treat Comorbid Posttraumatic Stress Disorder, Depression, and Anxiety. *Journal of EMDR Practice and Research*, 7(2), 65-80.
- Manfield, P. (1998a). EMDR terms and procedures: Resolution of uncomplicated depression. In P. Manfield (Ed.), *Extending EMDR: A casebook of innovative applications*. (1st ed., pp. 15-36). New York: W. W. Norton.
- Manfield, P. (1998b). *Extending EMDR: A casebook of innovative applications*. New York: WW Norton & Co.
- Manfield, P. (1998c). Filling the void: Resolution of a major depression. In M. P (Ed.), *Extending EMDR: A casebook of innovative applications*. (1st ed., pp. 113-137). New York: W. W. Norton.
- Marcus, S. V., Marquis, P., & Sakai, C. (1997). Controlled study of treatment of PTSD using EMDR in an HMO setting. *Psychotherapy: Theory, Research, Practice, Training*, 34(3), 307.
- Maxfield, L., & Hyer, L. (2002). The relationship between efficacy and methodology in studies investigating EMDR treatment of PTSD. *Journal of clinical psychology*, 58(1), 23-41.
- Montefiore, D., Mallet, L., Levy, R., Allilaire, J. F., & Pelissolo, A. (2007). [Pseudo-dementia conversion and post-traumatic stress disorder]. *Encephale*, 33(3 Pt 1), 352-355.
- Narimani, M., Ahari, S., & Rajabi, S. (2010). Comparison of efficacy of eye movement desensitization and reprocessing and cognitive behavioural therapy therapeutic methods for reducing anxiety and depression of Iranian combatant afflicted by post traumatic stress disorder. *Medical Sciences Journal of Islamic Azad University, Tehran Medical Branch*, 19(4(58)), 236-245.
- NCCMH. (2010). *Depression: The NICE guidance on the treatment and management of depression in adults. Updated Edition. National Clinical Practice Guideline 90*. London: British Psychological Society and The Royal College of Psychiatrists.
- NICE. (2005). Post-traumatic stress disorder (PTSD): The management of PTSD in adults and children in primary and secondary care: National Institute for Health and Clinical Excellence, London.
- Oppenheim, H.-P. (2009). Casus 10 - De Kwetsbaarheid van kracht: Vrouw met depressies en paniekaanvallen na overlijden van haar vader [case 10 - the vulnerability of strength: A women with depression and panic attacks after the death of her father]. In H. Hornsveld & S. Berendsen (Eds.), *Casusboek EMDR, 25 voorbeelden uit de praktijk* (1st ed., pp. 157-167). Houten: Bohn Stafleu Van Loghum.
- Raboni, M. R., Tufik, S., & Suchecki, D. (2006). Treatment of PTSD by eye movement desensitization reprocessing (EMDR) improves sleep quality, quality of life, and perception of stress. *Annals of the New York Academy of Sciences*, 1071(1), 508-513.
- Riso, L. P., & Newman, C. F. (2003). Cognitive therapy for chronic depression. *Journal of clinical psychology*, 59(8), 817-831.
- Robinson, L. A., Berman, J. S., & Neimeyer, R. A. (1990). Psychotherapy for the treatment of depression: A comprehensive review of controlled outcome research. *Psychological Bulletin*, 108(1), 30.

- Rosas Uribe, M. E., Lopez Ramirez, E. O., & Jarero Mena, I. (2010). Effect of the EMDR psychotherapeutic approach on emotional cognitive processing in patients with depression. *Spanish Journal of Psychology*, *13*(1), 396-405.
- Rothbaum, B. O. (1997). A controlled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disorder sexual assault victims. *Bulletin of the Menninger Clinic*, *61*(3), 317-334.
- Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged Exposure versus Eye Movement Desensitization and Reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress*, *18*(6), 607-616.
- Schneider, J., Hofmann, A., Rost, C., & Shapiro, F. (2008). EMDR in the treatment of chronic phantom limb pain. *Pain Medicine*, *9*(1), 76-82.
- Servan-Schreiber, D. (2004). *The instinct to heal*: Diamond Pocket Books (P) Ltd.
- Shapiro, F. (1995). *Eye movement desensitization and reprocessing (EMDR): Basic principles, protocols and procedures*. New York: Guilford.
- Shapiro, F., & Forrest, M. S. (2004). *EMDR: The breakthrough therapy for overcoming anxiety, stress, and trauma*: Basic Books.
- Shapiro, F., & Laliotis, D. (2011). EMDR and the adaptive information processing model: Integrative treatment and case conceptualization. *Clinical Social Work Journal*, *39*(2), 191-200.
- Shapiro, R. (2005). *EMDR solutions: Pathways to healing*: WW Norton & Company.
- Shapiro, R. (2009a). Attachment-Based Depression Healing the "Hunkered-Down". *EMDR Solutions II: For Depression, Eating Disorders, Performance, and More*, 90.
- Shapiro, R. (2009b). *EMDR Solutions II: For Depression, Eating Disorders, Performance, and More*: WW Norton & Company.
- Shapiro, R. (2009c). Endogenous Depression and Mood Disorders. *EMDR Solutions II: For Depression, Eating Disorders, Performance, and More*, 24.
- Shapiro, R. (2009d). Introduction to Assessment and Treatment of Depression with EMDR. *EMDR Solutions II: For Depression, Eating Disorders, Performance, and More*, 9.
- Shapiro, R. (2009e). Trauma-Based Depression. *EMDR Solutions II: For Depression, Eating Disorders, Performance, and More*, 21.
- Silver, S. M., Brooks, A., & Obenchain, J. (1995). Treatment of Vietnam War veterans with PTSD: a comparison of eye movement desensitization and reprocessing, biofeedback, and relaxation training. *Journal of Traumatic Stress*, *8*(2), 337-342.
- Silver, S. M., Rogers, S., & Russell, M. (2008). Eye movement desensitization and reprocessing (EMDR) in the treatment of war veterans. *Journal of Clinical Psychology*, *64*(8), 947-957.
- Singleton, N., Bumpstead, R., O'Brien, M., Lee, A., & Meltzer, H. (2003). Psychiatric morbidity among adults living in private households, 2000. *International Review of Psychiatry*, *15*(1-2), 65-73.
- Solomon, D. A., Keller, M. B., Leon, A. C., Mueller, T. I., Lavori, P. W., Shea, M. T., . . . Maser, J. D. (2000). Multiple recurrences of major depressive disorder. *American Journal of Psychiatry*, *157*(2), 229-233.
- Solomon, R. M., & Shapiro, F. (2008). EMDR and the Adaptive Information Processing Model Potential Mechanisms of Change. *Journal of EMDR Practice and Research*, *2*(4), 315-325.
- Song, L., & Wang, Z.-Y. (2007). Sertraline treatment of depression combined with EMDR research : A control study of sertraline combined with the EMDR in the treatment of depression. *Journal of Clinical Psychosomatic Disease*, *13*(4), 307-308.
- Sprang, G. (2001). The Use of Eye Movement Desensitization and Reprocessing (EMDR) in the Treatment of Traumatic Stress and Complicated Mourning: Psychological and Behavioral Outcomes. *Research on Social Work Practice*, *11*(3), 300-320. doi: 10.1177/104973150101100302
- Srivastava, U. V., & Mukhopadhyay, A. (2008). Application of EMDR in the Treatment of Major Depressive Disorder: A Case Study. *Indian Journal of Clinical Psychology*, *35*(2), 163-172.

- Sun, T.-F., Wu, C.-K., & Chiu, N.-M. (2004). Mindfulness meditation training combined with eye movement desensitization and reprocessing in psychotherapy of an elderly patient. *Chang Gung Medical Journal*, 27(6), 464-469.
- Tarquinio, C., Schmitt, A., & Tarquinio, P. (2011). Violences conjugales et psychothérapie Eye Movement Desensitization Reprocessing (EMDR): études de cas. *L'Évolution Psychiatrique*.
- Tarquinio, C., Schmitt, A., Tarquinio, P., Rydberg, J. A., & Spitz, E. (2011). Intérêt de la psychothérapie Eye Movement Desensitization Reprocessing dans le cadre de la prise en charge de femmes victimes de viols conjugaux. *Sexologies*.
- van der Kolk, B. A., Spinazzola, J., Blaustein, M. E., Hopper, J. W., Hopper, E. K., Korn, D. L., & Simpson, W. B. (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), 37-46.
- Wood, E. (2012). *Sheffield EMDR and Depression Investigation (SEDI) – The reconsolidation model of Eye Movement Desensitization and Reprocessing (EMDR) and how it can be tested with regard to the emotional impact of the memory and the pathology associated with it in patients with long term depression*. Paper presented at the 18th International Network for Psychiatric Nursing Research - Mental Health Nursing and Research...Through the ages, Oxford, UK.
- Üstün, T. B., Ayuso-Mateos, J. L., Chatterji, S., Mathers, C., & Murray, C. J. L. (2004). Global burden of depressive disorders in the year 2000. *The British Journal of Psychiatry*, 184(5), 386-392.

Table 1: Studies using EMDR to treat PTSD or pain which consider depression as comorbid diagnosis

Author	Year	Language	Study type (N=)	Primary diagnosis	Significant improvement in Depression?
Arabia et al	2011	English	Pilot RCT: EMDR cf imaginal exposure (42 divided by 2 arms)	PTSD	Yes, EMDR sig better than imaginal exposure
Chemtob et al	2002	English	Random lagged groups (ABA design): (32 divided by 2 arms)	PTSD	Yes
Hogberg et al	2007	English	Pilot RCT: EMDR (13) cf WL (11)	PTSD	Yes, EMDR group sig better than WL
Ironson et al	2002	English	Pilot RCT: EMDR (10) cf PE (12)	PTSD	Yes, groups not different
Korn & Leeds	2002	English	Case studies (2)	PTSD	Yes
Lee et al	2002	English	RCT: EMDR (12) cf SITPE (12)	PTSD	Yes, groups not different
Lobenstine and Courtney	2013	English	Case study (1)	PTSD, depression, anxiety	Yes
Marcus et al	1997	English	CT: EMDR cf SC (67 divided by 2 arms)	PTSD	Yes, EMDR group sig better than SC
Montefiore et al	2007	French	Case study (1)	PTSD Depression	Yes
Narimani et al	2010	Persian	Case control: EMDR cf CBT (51 divided by 2 arms)	PTSD	Yes, groups not different
Raboni et al	2006	English	Case studies	PTSD	Yes
Rothbaum	1997	English	RCT: EMDR cf WL (18 divided by 2 arms)	PTSD	Yes, EMDR group sig better than WL
Rothbaum et al	2005	English	RCT: EMDR (20) cf PE (20) cf WL (20)	PTSD	Yes, groups not different
Schneider et al	2008	English	Case series (5)	Phantom limb pain	Yes
Silver et al	1995	English	RCT: EMDR (13) cf SC (55) cf relaxation (9) cf biofeedback (6)	PTSD	No, groups not different
Silver et al	2008	English	Case studies (2)	PTSD	Yes
Tarquinio et al	2011a	French	Case studies (5)	PTSD	Yes
Tarquinio et al	2011b	French	Case studies (6)	PTSD	Yes
van der Kolk et al	2007	English	RCT: EMDR (29) cf fluoxetine (30) cf pill placebo (29)	PTSD	Yes, EMDR group sig better than others

cf = compared to, sig = significant, WL = waiting list control, SITPE = Stress Inoculation Training with Prolonged Exposure, PE = prolonged exposure, CBT = cognitive behavioural therapy, SC=standard care, CT = controlled trial, N= number of participants in the study

Table 2: Quality assessment summaries for controlled trials of EMDR and PTSD that consider comorbid depressive symptoms

Paper	Randomization	Allocation concealment	Blinding of assessors	Attrition reported	Exclusion reported	Selective reporting	Clearly focussed research question	Group homogeneity	Groups treated the same	Are confidence intervals (CI) or standard deviations (SD) reported?
Arabia et al 2011	Yes	?	?	Yes	Yes	No	Yes	Yes	Yes	Yes (CI)
Chemtob et al 2002	Yes	?	?	No	Yes	No	Yes	Yes	Yes	Yes (SD)
Hogberg et al 2007	Yes	No	Yes	Yes	Yes	No	Yes	Yes	?	Yes (SD)
Ironson et al 2002	Yes	?	?	Yes	No	No	Yes	?	Yes	Yes (SD)
Lee et al 2002	Yes	?	Self report	Yes	Yes	No	Yes	Yes	Yes	Yes (SD)
Marcus et al 1997	Yes	?	No	No	Yes	No	No	?	No	Yes (SD)
Rothbaum 1997	Yes	No	Yes	Yes	Yes	No	Yes	No – WL group more depressed	Yes	Yes (SD)
Rothbaum et al 2005	Yes	?	Yes	Yes	Yes	Possible	Yes	No – EMDR group PTSD worse	Yes	No
Silver et al 1995	No, voluntary recruitment	No	?	No	No	No	No	?	No	No
Van der Kolk et al 2007	Yes	?	Yes	Yes	Yes	No	Yes	Yes	No	Yes (SD)

?= unreported

Table 3: Publications which report the use of EMDR to treat a primary diagnosis of Depression

Author	Year	Journal/ book	Language	Study type (N=)	Primary diagnosis	Sig improv in Depression
Bae et al	2008	Journal	English	Case studies (2)	Depression	Yes
Broad & Wheeler	2006	Journal	English	Case study (1)	Depression ADHD	Yes
Grey	2011	Journal	English	Case Study (1)	Depression	Yes
Hogan	2001	Unpub thesis	English	Pilot RCT: EMDR (15) cf CBT (15)	Depression	Yes, groups not different
Knipe	2009	Book ch	English	Anecdote (2)	Depression	Yes
Manfield	1998a	Book ch	English	Anecdote (1)	Depression	Yes
Manfield	1998c	Book ch	English	Anecdote (1)	Depression	Yes
Oppenheim	2009	Book ch	Dutch	Case study (1)	Depression	Yes
Rosas Uribe et al	2010	Journal	English	Case studies (3)	Depression	Yes
Servan-Schreiber	2004	Book	English	Case study	Depression	Yes
Shapiro	2009a	Book ch	English	Anecdote (2)	Depression	Yes
Shapiro	2009b	Book ch	English	Anecdote (2)	Depression	Yes
Shapiro	2009c	Book ch	English	Anecdote	Depression	Yes
Shapiro	2009d	Book ch	English	Anecdote (1)	Depression	Yes
Shapiro & Forrest	2004	Book	English	Anecdote (1)	Depression	Yes
Song & Wang	2007	Journal	Chinese	RCT: sertraline + EMDR (32) cf sertraline (32)	Depression	Yes, groups not different
Srivastava & Mukhopadhyay	2008	Journal	English	Case Study (1)	Depression	Yes
Sun et al	2004	Journal	Chinese	Case study (1): EMDR +mindfulness	Depression	Yes

cf = compared with, ADHD = attention deficit and hyperactivity disorder, book ch = book chapter, sig improv = significant improvement, N= number of participants in the study, Unpub thesis = unpublished PhD thesis