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Efficacy of Eye Movement Desensitization and Reprocessing Therapy in the Treatment of Trauma: A Systematic Review

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Efficacy of Eye Movement Desensitization and Reprocessing Therapy in the Treatment of Trauma:

A Systematic Review

by

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MSW Clinical Research Paper

Presented to the faculty of the
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Master of Social Work

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The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

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Abstract

This systematic review examines the efficacy of Eye Movement Desensitization and Reprocessing (EMDR) Therapy as an intervention in the treatment of trauma in adults. Upon careful review of present literature, 14 articles met criteria. Common themes were identified throughout the reviewed studies, including treatment intervention comparison, variation in EMDR model, treatment fidelity, longitudinal follow-up, and co-morbidity. While results show that EMDR is an effective treatment intervention for the treatment of trauma, the majority of studies found it to be no more effective than other treatment interventions.

Efficacy of Eye Movement Desensitization and Reprocessing in the Treatment of Trauma: A Systematic Review

Francine Shapiro (2002) defines trauma as “any event that has a lasting negative effect on the self or psyche” (p. 14). While trauma can be universally experienced, each individual can process and digest the experience differently. Trauma can occur in a single isolated event, over a span of years, or throughout a lifetime. Identifying an effective intervention is crucial for the treatment of those struggling to process their experience.

Minnesota Statute defines clinical social work practice as “applying professional social work knowledge, skills and values in the differential diagnosis and treatment of psychosocial function, disability, or impairment, including addictions and emotional, mental and behavioral disorders” (Section 148E.010). To provide this mandated level of care, clinicians must be willing to continuously expand their knowledge related to effective treatment modalities. Mental health treatment has evolved significantly over the years, based on extensive research with deep roots in theoretical framework. These mainstream approaches include, but are not limited to: Cognitive Behavioral Therapy (CBT), Narrative Therapy, Prolonged Exposure Therapy, and Dialectal Behavioral Therapy (DBT). Less commonly known therapeutic approaches currently gaining momentum include Mindfulness Based Therapy, Therapeutic Writing, Music/Drama Therapy, Equine Assisted Psycho-Therapy and Eye Movement Desensitization and Reprocessing (EMDR).

There is an expectation that clinicians will build their knowledge base on approaches that have been recognized as evidence based practices and current literature supports the myriad of therapeutic approaches that are most often rooted in theory, such as CBT and DBT for example. Rather, EMDR was “not derived from a theoretical perspective or from research experiments” (Shapiro, 2002, p. 28). As such, EMDR has often been the target of scrutiny and controversy and researchers have questioned the efficacy of EMDR. Despite years of clinical application, EMDR remains a novel approach. The purpose of this systematic review is to examine current literature regarding EMDR and its efficacy in the treatment of trauma in adults.

Literature Review

The EMDR Institute (2011) defines EMDR as “a psychotherapy treatment that was originally designed to alleviate the distress associated with traumatic memories”. EMDR aims to target the specific negative cognitions tied to traumatic memories using bilateral stimulation accompanied by reprocessing techniques. This literature review will address the most common diagnoses of the target population, an overview of EMDR’s history and origins as well as an outline of the eight phases of EMDR as developed by Francine Shapiro.

Post-Traumatic Stress Disorder

While not all trauma survivors meet criteria for Post-Traumatic Stress Disorder (PTSD), many individuals who experience trauma are diagnosed with PTSD. According to the National Institute of Mental Health (2012), 3.5% of adults in

the United States are diagnosed with PTSD and 36.6% (or 1.3% of the US population) are coded as “severe”.

The Diagnostic and Statistical Manual [DSM-5] includes four clusters of symptoms that must be experienced in order to meet criteria for PTSD: re-experiencing or intrusive symptoms, avoidance, negative cognitions and mood and arousal (DSM-5, 2014). In contrast to the earlier DSM-IV-TR (2002) criteria that identified three symptoms clusters of re-experiencing, avoidance and hyper arousal, the DSM-5 criteria also identifies the existence of a ‘fight’ reaction to the event (DSM-5, 2014).

Another significant change between DSM-IV-TR and DSM-5 is the definition of a traumatic event. DSM-5 includes the specific addition of sexual assault, as well as repeated exposure to details of trauma (DSM-5, 2014). This exposure may occur in many forms, such as when an individual directly experiences or witnesses a singular event, or when an individual experiences “first hand repeated or extreme exposure to aversive details of the traumatic event” (DSM-5, 2014, p. 271) such as a traumatic experience related to a profession (paramedic, police officer, etc.). Secondary exposure may occur when a violent or accidental event occurs to a close family member or friend. The event must involve actual or threatened death, serious injury or a sexual assault (DSM-5, 2014).

Controversy surrounds the DSM-5 criteria for PTSD, as not all traumatic experiences qualify. For the purposes of this review, the sample includes

individuals with a primary diagnosis of PTSD, as well as individuals with trauma backgrounds who do not meet full DSM-5 criteria.

History of Eye Movement Desensitization and Reprocessing

Eye Movement Desensitization [EMD] was originally developed in 1987 by psychologist Francine Shapiro, and later evolved into EMDR (Shapiro, 1989). Shapiro's research indicated the intervention could be particularly helpful in the treatment of traumatic and stress related symptoms when using rhythmic and quick eye movements while focusing on the distressing memory or incident (Shapiro, 1989). So often, these distressing images or memories of past traumatic experiences significantly affected an individual's daily life and functioning. EMDR strives to address and improve the negative cognition, affective and physiological states. The desired effect of EMDR is to 'desensitize' the image and create a new positive association for the individual (Shapiro, 1989). Along with desensitizing, EMDR aims to provide the individual with new, more adaptive skills and resources to promote improved functioning on a daily basis (Shapiro, 1989).

EMDR works off the assumption that current perception is based on earlier life experiences. Shapiro (2002) theorized that an individual could become stuck in a distorted reality after experiencing a disruption due to trauma and that the resulting negative cognitions and associations could impact the individual long after the experienced trauma. For example, a young woman experiences a physiological hyper arousal state while walking across a bridge on her way home from visiting a

friend. This state is triggered by memories of a past mugging on a bridge, which triggers the belief that she is unsafe. Shapiro (2002) believes this initial experience of the mugging created dysfunctional associations that are stored in a woman's memory and suggest she is unsafe while walking across this bridge.

As identified earlier, one of the more controversial aspects of EMDR is that it was not primarily derived from a theoretical perspective (Shapiro, 2002). Instead, the Adaptive Information Processing Model (AIP) governs EMDR. Developed by Francine Shapiro, AIP is comprised of three major components: 1) exploring the client's history to identify any past significant past events that may have been traumatic for the client, 2) examining present events and functioning and how this may have been impacted by past experiences and 3) identifying present internal resources and skills as well as skills the client may need to develop to move forward (Shapiro, 2002).

Through these components, AIP encourages clinicians to look at the 'big picture' when looking at the client, examining both past and present events, no matter how minor they may have appeared at the time. AIP stresses the view that clients' past dysfunctional associations can result in the "lens" they now view the world (EMDR Institute, 2011). When looking at a client's negative cognitions, such as 'I am defective' or 'I deserve to be miserable,' most clinicians would agree that these are typically tied to earlier experiences. Memories and experiences are stored in "networks" which can include emotions, thoughts, images, and somatic symptoms and information is processed and "learned" when new associations are created

between a past and present event (EMDR Institute, 2011). Within the AIP Model, if past traumatic or dysfunctional memories are not processed, they create the basis for future dysfunction (Shapiro, 2002).

According to the AIP Model, new information processing occurs when we make associations based on our experiences and the interpretations of these experiences; for example, an adult who was bullied as a child (Shapiro, 2002). Perhaps as a child, negative cognitions such as 'I am stupid' were developed. Now grown, he gets into an argument with a co-worker and the previous associations made with past experiences, results in the belief that he is 'stupid'. The AIP model suggests that these "dysfunctional reactions" were the result of disrupted connections (Shapiro, 2002). Shapiro (2002) also uses the example of an individual that gets into argument with a co-worker; this time the individual is able to go home, process the information. After a period of time, the argument doesn't bother him anymore. She identifies this individual as having achieved "adaptive resolution" and able to store the useful information and let go of the initial negative emotions and cognitions experienced during the argument. To achieve this resolution, EMDR utilizes an 8-phase system accompanied with bilateral (side to side) movements, which could include eye movements, hand tapping or hand held buzzers (EMDR Institute 2011).

Phases of EMDR

Phase One begins with obtaining the client's history and assessing if the client is ready for EMDR. This phase is when the clinician is assessing past traumas,

current stressors/triggers and current skills/resources in place and those still needed (EMDR Institute, 2011). The clinician will assess current support systems and client strengths. The purpose of this phase is in part to assess appropriateness and readiness to begin EMDR.

The second phase occurs when the clinician begins to prepare the client for beginning EMDR. This phase includes the clinician discussing treatment expectations, provides education on symptoms, and provides training on coping and containment skills (Shapiro, 2002). The clinician may provide framework for techniques the client can use to contain their emotions and experience in between sessions, as well as coping skills that can be used should the client become triggered during session.

The third phase of treatment is referred to as Assessment; this phase is when the clinician and client determine the target memory for treatment. Once identified, the client discusses the negative belief surrounding that memory, the positive desired belief, any physical or somatic sensations associated with the memory, and the emotions the client is feeling at this time (Shapiro, 2002). *An example of this may be considering the young woman previously mentioned who was mugged.* Using the earlier example of the young mugging victim, her negative cognition may be 'I am unsafe' the desired positive belief is 'I am safe now,' the physical sensations may be increased heart rate and sweating palms, and current emotion may be fearful.

The fourth phase of treatment is referred to as desensitization. In this phase, the experienced is processed to achieve an "adaptive resolution" while also weaving

in positive cognitions and experiences (Shapiro, 2002). In this phase, clients are frequently asked to rank their distress level from either 1-10 or 1-100. Clients are asked to allow their memory to move back based on associations, when the clinician asks the client, in a non-directive way, to process whatever is brought up with each memory. *An example of this may be with an adult with the history of a childhood bullying.* Initially, he may bring up the argument as distressing, but this may eventually float back to his experience of being bullied as a child, if not already on the forefront of his mind.

The remaining phases include installation, body scanning, closure, and reevaluation. The fifth phase of treatment is installation. In this phase, the clinician assists the client in linking the positive cognition with the targeted memory (Shapiro, 2002). This phase also asks the client to rank their belief, but rather than intensity, they are asked to rank the validity of the positive cognition (Shapiro, 2002). The sixth phase of treatment is referred to as a body scan, when the clinician focuses on any remaining distressing symptoms that may have been brought up in association with the targeted memory (Shapiro, 2002). The seventh phase is referred to as closure and focuses on the skills learned and the client's ability to maintain stability outside of sessions. The clinician may use techniques such as mindfulness or guided imagery (Shapiro, 2002). The final phase is reevaluation. In this phase, the clinician and client evaluate progress made, current impact on client and evaluate progress made in client's daily life (Shapiro, 2002). Some clients may move through these phases more quickly than others and it is typically assumed

that those with more extensive trauma histories may take longer to move through the phases (Shapiro, 2002).

Conceptual Framework

The use of evidence-based practice (EBP) among clinicians has long been seen as a valuable facet in providing quality care to clients, yet it is not without barriers. Wike et al., (2014) identifies some of the difficulties that clinical social workers face in incorporating evidence-based practice in their own work. Clinicians have difficulty incorporating EBP into their practice for a variety of reasons including the belief of the clinician that their current practices are sufficient and not in need of change, and inadequate training or knowledge of how to use current EBP (Wike et al., 2014). Wike et al. (2014) also discuss lack of time and availability of resources to use EBP. These challenges could contribute to the resistance toward EMDR.

Methods

According to Petticrew (2005), a systematic review is defined as a “method of making sense of large bodies of information and a means of contributing to the answers to questions about what works and what does not (p.4). This systematic review searched multiple databases in order to identify articles, and then reviewed the articles for specific content using inclusion/exclusion criteria. Throughout the years, there has been some controversy in the literature regarding the effectiveness of EMDR as a treatment intervention for PTSD/trauma. Since systematic reviews

have been proven valuable and helpful in regards to determining the effectiveness of interventions, this method was chosen (Petticrew, 2005).

Search Strategy

This review focused on literature found the databases of: PsychINFO, SocINDEX and PILOT using the search terms “Eye Movement Desensitization and Reprocessing” and “trauma”. Only articles there were peer reviewed were used. If a search generated new terms, searches were completed again with new terms on all databases.

Inclusion/Exclusion Criteria

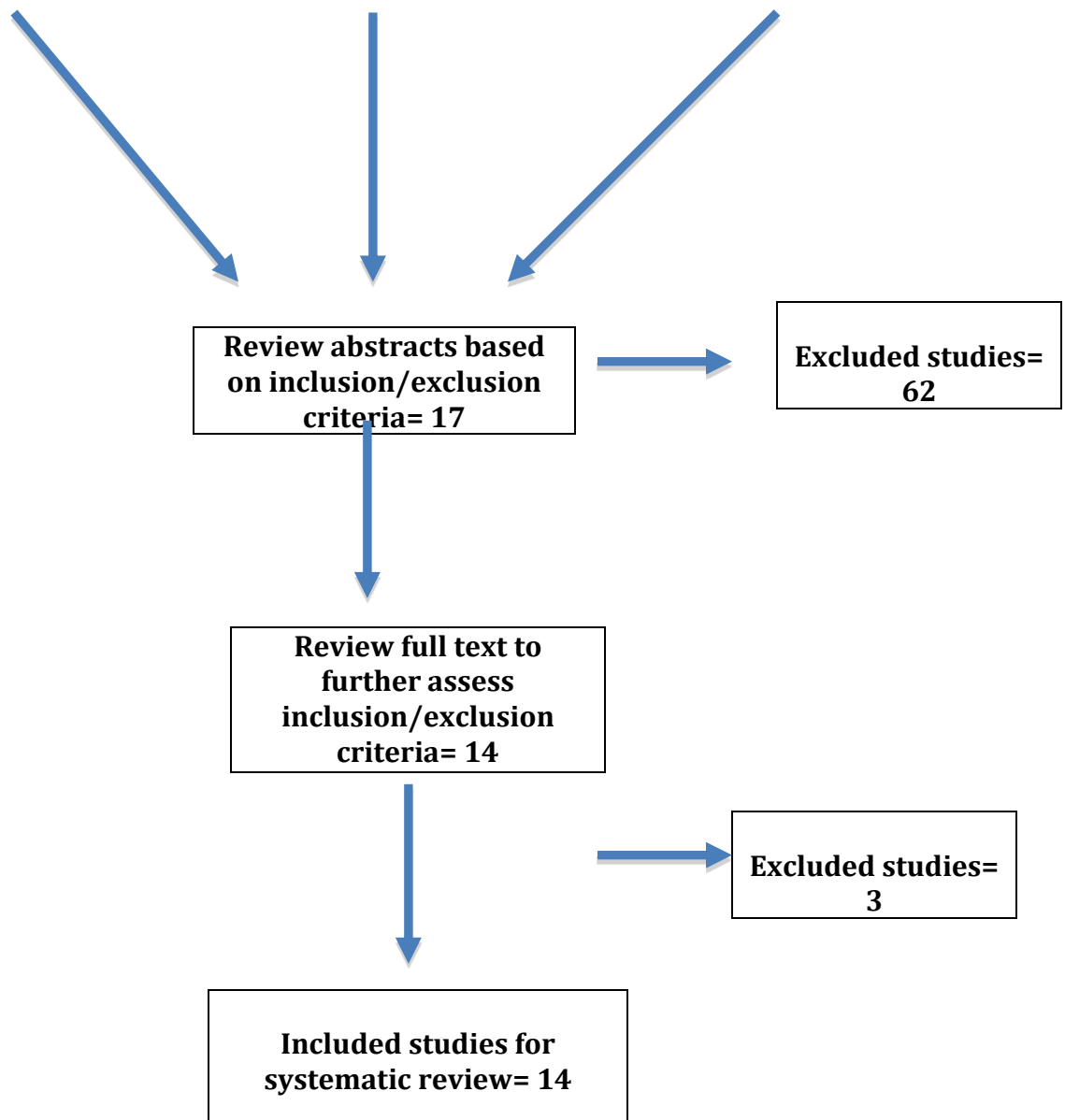
There were several aspects to consider when determining inclusion and exclusion criteria. This review focused on studies conducted on adult men and woman in a mental health settings focusing primarily in outpatient treatment settings. The review examined both qualitative and quantitative studies and excluded single case studies. All participants in the studies must have some background of trauma, whether they meet criteria for PTSD or not. This was initially by self-report then assessed by clinical interview. The review focused only on peer-reviewed articles and studies were published in English. Treatment outcomes, length of time in treatment, and research design will be examined. This is reviewed in more detail in Table 1.

Data Abstraction

After the initial search, the abstract and title of the journal article was reviewed for initial screening to determine if it met the inclusion and exclusion criteria. If the study met the initial screening, it was then reviewed in full for further assessment. Once reviewed and inclusion criteria was met, the study was kept for the review. This review will focus on studies that meet the inclusion criteria. In the initial search, 17 articles met inclusion criteria; however, upon further review of the full text, three were excluded for studies involving adolescents and individuals with non-trauma histories (migraine headaches). This information was kept in a table and carefully reviewed to be later included in this review.

Table 1*Search Strategy*

Search Terms on PILOT:	Search Terms on PsycINFO	Search Terms on SocINDEX
Eye Movement Desensitization and Reprocessing= 351 +Trauma= 163 + Not Children= 127 + Not Adolescents= 141 + Adults= 58	Eye Movement Desensitization and Reprocessing= 24 +Trauma= 24 + Not Children= 20 + Not Adolescents= 20 + Adults= 20	Eye Movement Desensitization and Reprocessing= 2 +Trauma= 1 + Not Children= 1 + Not Adolescents= 1 + Adults= 1



Findings

The goal of this systematic review was to examine the present literature on the effectiveness of EMDR as a treatment intervention for those who have experienced trauma. Fourteen articles met inclusion criteria and were examined for the purpose of this systematic review. Common themes were identified throughout included: treatment intervention comparison, variation in EMDR model, treatment fidelity, longitudinal follow-up and co-morbidity. Table 2 outlines the examined studies.

Table 2:

Study Comparison

Journal Article	Setting	Participants	Therapists	Methods	Results	Limitations
Comparison of Two Treatments for Traumatic Stress: A Community-Based Study of EMDR and Prolonged Exposure (PE) (Ironson, Freund, Strauss, & Williams, 2002)	Specialty clinic for treating trauma patients	22 participants who had single trauma, past spousal abuse or who were adult survivors of childhood sexual abuse without dissociation	3 rd or 4 th year doctoral students in clinical psychology or post-doc students in psychology All therapists received Level I EMDR training (supervisors received Level II training)	Randomly assigned to EMDR or Prolonged Exposure; Treatment includes: assessment at baseline, after 6 sessions (3 active sessions) and at 3 month follow up Sessions were 90 minutes in length Homework given to both	-higher drop out in PE -Significant reduction in both, but neither was more effective than the other -Using a 70% reduction in PTSD, it was determined EMDR improved after 3 sessions (7 out of 10) and PE was (2 of 12) <i>Follow-Up:</i> -Follow up was only completed on 12 (6 of each treatment protocol) -Maintained treatment gains for both at 3 mos.	-small sample size -assessment was primarily by self-report -assessors were not blind to treatment condition -therapist training -PE pts reported higher BDI scores at baseline
Preliminary study of new integrative approach in treating post-traumatic stress disorder: SEE FAR CBT (Lahad et al., 2010)	Northern Israel-outpatient clinic, psycho-trauma treatment unit	22 participants diagnosed with PTSD, and trauma for all was related to Second Lebanon War experiences	22 clinic therapists, 8 were "experts" in EMDR and SEE FAR CBT; average of 5 years training and approx.. 8 years practice of trauma work	12 were administrated EMDR and 9 were administered SEE FAR CBT; random assignment	78% (8 patients) of SEE FAR CBT reported reduction in sx vs 42% (5) of EMDR. <i>Follow-Up:</i> 1 year via telephone: 56% of SEE FAR CBT reported continued reduction vs. 42% of EMDR Also 89% of SEE FAR CBT and 75%	-small sample size -specific population/trauma -randomization of participants into groups -did not gather initial information on co-morbidity or previous treatment -self-report by patients

Journal Article	Setting	Participants	Therapists	Methods	Results	Limitations
<p>On treatment with eye movement desensitization and reprocessing of chronic post-traumatic stress disorder in public transportation workers- A randomized controlled trial (Hogberg et al., 2007)</p>	<p>Outpatient clinic</p>	<p>24 public transportation employees in Stockholm, Sweden, trauma was either person under train or assault at work; all diagnosed with PTSD</p>	<p>Two psychotherapists “fully trained in the method”</p>	<p>-Randomly assigned to either EMDR (13) or wait list (11) Assessed pre and post treatment -12 completed 5 sessions of EMDR and 9 waitlist 90 minute sessions followed Shapiro’s guidelines</p>	<p>of EMDR had mild-moderate PTSD symptoms SEE FAR CBT had lower avoidance sx vs EMDR</p> <p>Post treatment: 67% of EMDR did not meet criteria for PTSD vs 11% in WL</p>	<p>-sample size -specific trauma</p>
<p>The Effects of Writing Therapy in Comparison to EMD/R on Traumatic Stress: The Relationship between Hypnotizability and Client Expectancy to Outcome (Largo-Marsh & Spates, 2002)</p>	<p>Outpatient setting at a university psychology clinic</p>	<p>24 participants who had experienced trauma 75% who met full PTSD criteria</p>	<p>Therapists were trained by Francine Shapiro</p>	<p>Randomly assigned to EMD/R and structured writing -assessed pre and post treatment and follow up; -each provided with up to 3 sessions of either treatment at 1 hour per session</p>	<p>Significant reductions in both treatments, improvement was maintained for both treatment modules at follow up (1-2 weeks after and 1 months after) -no significant correlation between client</p>	<p>-small sample size -not all were diagnosed with PTSD</p>
<p>The Effects of Eye Movement Desensitization and Reprocessing (EMDR) Therapy on Posttraumatic Stress Disorder in Survivors of the 1999 Marmara, Turkey, Earthquake (Konuk et al., 2006)</p>	<p>Tent city clinics in Turkey</p>	<p>41 participants who all had experienced the earthquake diagnosed with PTSD</p>	<p>5 Masters level therapists- used EMDR for 15 months prior to start, all received Level I and II training</p>	<p>90 minute EMDR session, tried to schedule weekly but not always possible; in addition to regular EMDR-pts were asked to identify disturbing aspect of event; used standard 8</p>	<p>SUD and VOC demonstrated significant changes during tx, average of 5.02 sessions to reduce symptoms -no difference in those prescribed psychotropic medications</p>	<p>-Could not do a randomized design due to tent cities -</p>

				phases	-significant difference in symptoms inversely correlated with education level <i>Follow-Up</i> 21 were reached to follow up	
Journal Article	Setting	Participants	Therapists	Methods	Results	Limitations
Statistical and Reliable Change with Eye Movement Desensitization and Reprocessing: Treating Trauma within a Veteran Population (Devilley, Spence & Rapee, 1998)	Outpatient clinic	51 war combat veterans who were diagnosed with PTSD; did not include individuals who had previously had EMDR	Therapist was trained by Shapiro to Level II	Randomly selected to receive either: 2 sessions of EMDR, standard psychiatric support (SPS) control or EMDR without eye movement (REDDR) using flashing lights instead- 90 minute session	EMDR- post tx: 8 out of 12 improved; 5 out of 12 in REDDR; 1 out of 10 in SPS; No significantly differences were found between pre and post tx between the 3 interventions <i>Follow-Up</i> Collected at pre and post treatment, 2 weeks after and 6 months after (via mail) At 6mos follow up, tx effects decreased to	-specific trauma
15 Month Follow-Up of EMDR Treatment for Posttraumatic Stress Disorder and Psychological Trauma (Wilson, Becker, & Tinker, 1997)	Outpatient clinic	Reached 69 of original 80, 56 met in person and 10 responded via mail (66 total) (32 diagnosed with PTSD, the rest with trauma experience)		3 90 minute sessions of EMDR administered 15 months ago	Of the 32 that originally were diagnosed with PTSD before initial treatment, 5 still met criteria (84% reduction) -research indicates that treatment gains were maintained at	None noted

Journal Article	Setting	Participants	Therapists	Methods	Results	Limitations
Eye Movement Desensitization and Reprocessing (EMDR) Treatment for Psychologically Traumatized Individuals (Wilson, Becker & Tinker, 1995)	Outpatient clinic	80 participants; 37 were diagnosed with PTSD, 43 had trauma experience	Received advanced EMDR training (4 of the 5) and the remaining therapist received intro training to EMDR	3 90 minute sessions of EMDR including 6 phases (prep, baseline assessment, desensitization, installation of positive cog., body scan and closure) vs delayed treatment of EMDR (1 month later)	follow-up 68% reduction in all participants -EMDR was effective in reducing symptoms -Found that better results regarding trauma specific rather than general symptoms <i>Follow-Up</i> 90 day follow up- still maintained	-only used 6 phases of EMDR
The Relative Efficacy and Treatment Distress of EMDR and A Cognitive Behavior Trauma Treatment Protocol in the Amelioration of Posttraumatic Stress Disorder (Deville & Spence, 1999)	Clinic- mixed group design	23 participants Diagnosed with PTSD, did not previously receive CBT or EMDR	Advanced training by Shapiro (treated 8) and completed EMDR training (treated remaining 3)	-assessed pre and post treatment, 2 weeks and 3 months via mail -12 in TTP and 11 in EMDR (TTP included SIT, PE and CBT) -up to 8 sessions provided of EMDR, followed protocol	TTP was more effective than EMDR (includes short and long term (3 months)) -83% of TTP no longer met criteria vs 36% in EMDR (post treatment) -3 month follow: 58% of TTP and 18% of EMDR	-lacked wait list condition -sample size
Effects of Three PTSD Treatments of Anger and Guilt: Exposure Therapy, Eye Movement Desensitization and Reprocessing and Relaxation Therapy (Stapleton, Taylor & Asmundson, 2006)	Clinic	45 participants diagnosed with PTSD	Level II training in EMDR	Exposure therapy (15), EMDR (15), Relaxation Therapy (15) -8 90 minute sessions	Pre and Post Tx, and 3 month follow up -No significant differences in all 3 treatments -gains maintained for all 3 at follow up	-trauma related anger and guilt were assessed by self-assessment -small sample size
Effects of the EMDR Protocol for Recent Traumatic Events on	Clinic	7 participants all diagnosed with Acute Stress	No mention of experience/training of therapists- only	3 were treated with EMDR-PRTE+CISD and 4 were treated	Results indicated effective results in treating early	-Small sample size -not randomized study

Acute Stress Disorder: A Case Series (Buydens, Wilensky, Hensley, 2014)		Disorder	that they are registered psychologists	with EMDR	trauma	
Journal Article	Setting	Participants	Therapists	Methods	Results	Limitations
Treatment of post-traumatic stress disorder with eye movement desensitization and reprocessing: Outcome is stable in 35 month follow-up (Hogberg et al., 2008)	Clinic-Sweden	Participants had experienced traumatic event in transportation industry (were employed) either assault or person under train; 51 total participants with 24 diagnosed with PTSD and the remaining with trauma experience	Doesn't specifically mention but does say treatment protocol was assessed by fully trained individual in EMDR	5 90 minute sessions; 12 had EMDR and 9 were waitlisted	60% of participants no longer met criteria for PTSD; decrease of symptoms was stable at 35 month follow up	Not noted
Brief Eclectic Psychotherapy v. eye movement desensitization and reprocessing therapy for post-traumatic stress disorder: randomized controlled trial (Nijdam et al., 2012)	Outpatient clinic	140 participants total diagnosed with PTSD with civilian trauma	Therapists received 3 day Level I training in EMDR	70 were treated with EMDR 70 treated with Brief Eclectic Psychotherapy -2 EMDR sessions (90 minutes)	Equally positive results, however EMDR had a quicker reduction of symptoms No follow up	No follow up
EMDR versus stabilization in traumatized asylum seekers and refugees: results of a pilot study (Heide et al., 2011)	Outpatient clinic- Dutch	20 participants diagnosed with PTSD (all refugees/asylum seekers)	Therapists trained to Level II EMDR	Participants randomly assigned to 11 sessions of EMDR or stabilization	Pre, post and 3 month assessment completed -EMDR was not less effective than stabilization, EMDR had improvement and stabilization had increase in symptoms between pre and post treatment	-difficult conditions attributed to high dropout rate

Treatment Intervention Comparison

Fourteen studies were analyzed in this review and include a variety of comparisons to other treatment models. Five of these studies did not specifically compare the efficacy of EMDR to another treatment model and instead used a waitlist design. Three studies compared EMDR to different Cognitive Behavioral Therapy (CBT) treatment variations. Lahad et al. (2010) compared EMDR to SEE FAR CBT which is comprised of Somatic Experiencing, Fantastic Reality and Cognitive Behavioral Therapy and found that there was a slight difference with 78% of participants (eight total) experiencing a reduction in symptoms as opposed to 42% of the EMDR (five total) participants. At the one year follow-up for this study, EMDR had remained at 42% while SEE FAR CBT symptoms reduction rate had decreased to 56% although SEE FAR CBT participants had lower avoidance symptoms (Lahad et al., 2010).

Nijdam et al. (2011) compared EMDR to Brief Eclectic Psychotherapy, which focused primarily on CBT concepts, and found an equally positive symptom reduction between the two interventions although no follow-up was completed. Devilly and Spence (1999) compared EMDR with a Trauma Treatment Protocol-CBT (TTP-CBT) and found a higher symptom reduction rate for TTP-CBT compared to EMDR with 83% of participants no longer meeting criteria for PTSD upon completion of the treatment as opposed to 36% of EMDR participants. At the three month follow-up, gains were maintained at 58% of TTP-CBT participants continuing to not meet criteria for PTSD versus 18% of EMDR participants.

Several studies examined the public transportation field and their related traumas. Pagani et al. (2007) focused on employees of Sweden's public transportation system, such as train conductors that had experienced a work related trauma. The study used a randomized control model to assess the use of EMDR in the treatment of trauma with transportation workers. Results indicated successful treatment with EMDR of 67% of participants; however, this specific study did not conduct a follow up assessment with participants.

Largo-Marsh and Spates (2002) compared the use of writing therapy and EMDR. The writing therapy was accompanied by individual therapy. Participants in the writing group were instructed to write specifically related to the trauma they had experienced. Participants were given a maximum of three treatment sessions and follow up was conducted approximately one month after treatment was completed. Results again indicated a positive response for both treatments and it was mentioned that several of the writing group participants reported they were able to develop a new skill (therapeutic writing) for future emotional distress. One potential concern outlined by the study was in regard to the completion of the writing outside of the therapy office. The study speculated that the patient's symptoms may worsen without the support of the therapist present. This was compared to EMDR therapy which does not include the use of homework.

Utilizing EMDR in natural disaster response was assessed in Konuk et al. (2006). Participants averaged approximately five sessions. Results indicated 92.7%

of those that participant found a reduction in traumatic symptoms. The differences between CBT as a viable trauma therapy treatment and EMDR is specifically discussed in this study and the nature of CBT homework would have proven difficult in the tent cities and with those who have been ousted from their homes due to the earthquake. The need for a faster treatment model that doesn't require homework is beneficial in this setting.

Variation in EMDR Model

Use of Shapiro's standard EMDR model varied throughout the studies reviewed in number of phases and sessions, therapist training and experience, and methodology of treatment. Ironson et al. (2002) incorporated "in vivo homework" for both treatment interventions when comparing EMDR and Prolonged Exposure (PE) as well as using the first session of treatment for evaluation rather than history taking as directed in Shapiro's model. It was noted in the study that despite these changes, all eight phases were used as well as the standard 90 minute sessions. While there was significant symptom reduction in both interventions, neither was more effective than the other and maintained these gains at the three month follow up (Ironson et al., 2002) and it was noted that PE had a higher drop-out rate than EMDR.

Two studies utilized different variations of EMDR compared to the Shapiro's EMDR protocol. Devilly, Spence and Rapee (1998) compared three different interventions: standard EMDR, EMDR without the eye movement component

(REDDR) which uses a box with flashing lights instead and Standard Psychiatric Support (SPS). All participants only received two sessions of each intervention at random selection and results indicated a slight difference in effectiveness (8 out of 12 in EMDR compared to 5 out of 12 in REDDR respectively and 1 out of 10 in SPS).

Buydens, Wilensky and Hensely (2014) focused on EMDR Protocol for Recent Traumatic Events (EMDR-PRTE), which applies to participants whose memories of the traumatic event haven't completely formed yet; accompanied by Critical Incident Stress Debriefing (CISD) in comparison to standard EMDR. Results of this study indicated EMDR-PRTE was effective in treating early trauma. Wilson, Becker and Tinker (1995) used a six phase model rather than the standard eight phase model to participants and compared this to delayed treatment of EMDR. Results indicated that symptom reduction was higher in relation to the trauma rather than general symptoms and gains were still maintained at the follow up.

As previously mentioned, some studies limited the number of treatment sessions provided to participants. Heide et al. (2011) provided 11 weekly or bi-weekly sessions in comparison to stabilization which was defined as therapy with a primary focus on the present situation. Results indicated that EMDR was not less effective than stabilization, although it was noted that stabilization had an increase in symptoms between pre and post treatment (Heide et al., 2011). Hogberg et al. (2007 & 2008) provided five 90 minute sessions to all participants. Upon completion of the treatment intervention, 67% of participants no longer met criteria

for PTSD (Hogberg et al., 2007 & 2008); however, compared to other studies, 67% is on the lower range of improvement percentages and may be indicative of the change in model.

Treatment Fidelity

Clinician experience in trauma therapy and training of EMDR varied within the studies reviewed. Shapiro (1989) developed a two level training régime for administrating EMDR to clients. As previously mentioned, two studies utilized therapists that were directly trained by Shapiro herself and six studies indicated that the therapists provided the EMDR had received both Level I and Level II trainings. Lahad et al. (2010) referred to the therapists as “experts in EMDR” (p.394) but do not specifically discuss if EMDR Level I or II training was received. Ironson et al. (2002) used doctoral students in Clinical Psychology in their final one to two years of school who have received Level I training and were supervised by those who had received Level II training. It is also notable to mention that Ironson et al. (2002) specifically mentions that fidelity to EMDR protocol was not measured.

Further, clinician experience with trauma work varied significantly among studies. Nijdam et al. (2012) required no previous trauma work experience and provided only a three day Level I training; despite this, findings yielded a positive response with the intervention of EMDR. In contrast, Stapleton, Taylor and Asmundson (2006) utilized therapists with years of extensive trauma work experience and no significant differences were found. Other studies did not

specifically address therapist's experience or level of training, though Hogberg et al. (2007) indicated therapists were "fully trained" and utilized an independent assessor who determined the EMDR protocol was followed as was the same with Hogberg et al. (2007)

Longitudinal Follow-Up

The question of whether positive gains in EMDR treatment are maintained over time is frequently debated. All of the studies reviewed obtained follow up data, with the exception of two (reference Table 2). Hogberg et al. (2008) conducted a follow up 35 months following treatment, the longest follow-up conducted in the 14 studies reviewed. The methods of follow up varied as well. Some opted to follow up with participants via mail, while others conducted phone interviews or requested in person interviews.

Most studies made attempts to follow up three and six months following treatment. Lahad et al. (2010) made an attempt to connect with participants one year following treatment via telephone and found 56% of SEE FAR CBT patients reported continued reduction in symptoms versus 42% of EMDR patients. Wilson, Becker and Tinker (1997) attempted to follow up with participants fifteen months following treatment and were successful in reaching 56 of the original 80 participants. Within this sample, treatment gains were maintained at 68%.

Co-Morbidity

This systematic review focused on adults who have experienced trauma in some form in within their lifetime. Nearly all of the studies focused on individuals who met criteria for Post-Traumatic Stress Disorder (PTSD) or Acute Stress Disorder (ASD). Assessment for co-morbidity varied between studies. The majority of studies assessed and excluded individuals with psychosis, disassociation or severe psychiatric impairment which included depression with active suicidal ideation. The assessment of Axis II disorders was not always conducted. Buydens, Wilensky and Hensley (2014) performed assessments for Axis I disorders only. Stapleton, Taylor and Asmundson (2006) did not screen for Axis II and included participants with other co-existing diagnoses while comparing Exposure Therapy, EMDR and Relaxation Therapy and results were equally favorable between the three with gains maintained at the follow-up (Stapleton, Taylor and Asmundson, 2006).

Failure to assess or identify co-occurring diagnoses could impact the outcome and the efficacy of EMDR. Two studies performed physical evaluations as well including blood pressure, blood tests and heart rate. Devilly, Spence and Rapee (1998) specifically screened for past EMDR treatment while other studies did not indicate a screening for past EMDR therapy.

Studies Included. Ironson et al. (2002) compared EMDR and Prolonged Exposure (PE) with twenty-two participants who had experienced traumatic stress.

Participants were identified through a university-based clinic and were primarily victims of rape and violent crime. While results yielded positive results with both approaches, EMDR was noted to provide a faster rate of symptom reduction than PE as evidenced by the study's finding that 70% saw a PTSD symptoms reduction after only three sessions of EMDR versus 16.7% of individuals who underwent PE.

Ironson et al. (2002) also found that successful results from both EMDR and PE were still maintained at the follow up of three months.

Wilson, Becker and Tinker (1997) conducted both 15- and 35-month follow ups on individuals who had participated in EMDR for the treatment of PTSD. Results indicated at the 15-month follow up, there was an 84% reduction in PTSD symptomology reported. Potentially confounding these results was the lack of control within those fifteen months and some of the participants engaged in additional therapy.

As previously mentioned, comparisons between EMDR and CBT for the treatment of trauma are frequently discussed. DeVilly and Spence (1999) compared EMDR and Trauma Treatment Protocol CBT (TTP-CBT) and assessed participants and both a two-week and three- month follow-up. Results indicated that TTP-CBT was both statistically and clinically more effective than EMDR for the treatment of trauma. Stapleton, Taylor and Asmundson (2006) examined the specific trauma symptoms of anger and guilt using EMDR, Exposure Therapy and Relaxation Therapy. Historically, exposure therapy has been questioned as participants have to

vividly recall their experience, which could result in an increase in both anger and guilt; however, results yielded no significant differences in treatment efficacy among the three approaches in relation to anger and guilt associated to the trauma. Nijdam et al. (2012) compared EMDR with trauma focused CBT (referred to as Brief Eclectic Psychotherapy) with individual diagnosed with PTSD in a randomized controlled study. Results indicated both treatments were effective though EMDR resulted in a faster result rate in symptoms reduction.

Buydens, Wilensky and Hensley (2014) compare a modified version of EMDR to standard EMDR. The modified version is referred to as EMDR Protocol for Recent Traumatic Events (EMDR-PRTE) in the treatment of individuals diagnosed with Acute Stress Disorder (ASD) who have experienced a recent trauma. Results yielded a positive outcome with a 71.8% symptom reduction rate. This particular study did not conduct a follow-up assessment to determine if results remained the same or worsened over time.

Heide et al. (2011) compared EMDR with stabilization in asylum seekers and refugees diagnosed with PTSD in a randomized trial. While results of this study indicated a lower dropout rate with EMDR, it was not found to be a more effective treatment model than stabilization in this population.

Discussion

The purpose of this systematic review was to examine current literature on EMDR and its effectiveness in the treatment in trauma experienced by adults. Fourteen studies were reviewed and results indicated no significant difference in EMDR compared to alternate treatment interventions. The studies that incorporated CBT based interventions such as SEE FAR CBT (Lahad et al., 2010) and TTP-CBT (Deville & Spence, 1999) had more favorable outcomes than EMDR and these gains were maintained at follow-up.

Results of this review also suggest that clinician training and experience may not necessarily impact outcome of treatment intervention. Currently, EMDR-trained therapists typically complete a two-level training accompanied by ongoing consultation (EMDR Inc., 2011). The findings of this review question the cost effectiveness of such training. Given training/experience may not necessarily impact outcome. While several studies did not specifically describe the training and experience in detail, thus making it difficult to evaluate the need for a two-level training. It would appear from the findings of this review, outcomes were primarily favorable.

The findings of this review also suggest that adherence to Shapiro's model does not significantly impact outcome. Not all studies specifically outlined the phases used in relation to the sessions provided. For example, a study may have noted that EMDR protocol was followed yet only three sessions were provided.

Since there are eight phases of EMDR, it is unclear whether or not the full eight phases were utilized and if not, how this would impact the results. The use of homework is often a debatable difference between CBT based interventions and EMDR. Findings indicated symptom reduction in the use of homework, however the specifics of the homework was not explained within the text leaving the question of the possibility of differences between standard CBT homework and what was provided in that particular study. The setting of treatment may impact use of homework and its effectiveness. Perhaps in a clinic setting as observed in this review would be beneficial but in a war torn city where the participants' everyday lives are uncertain, it would be more difficult.

Surprisingly, few studies specifically addressed co-morbidity assessment or assessment of previous therapy or whether or not therapy continued after completion of study until follow-up was completed. It would be difficult to assess effectiveness if some participants continued in therapy or had multiple mental health diagnoses prior to the study versus those with a single trauma experience.

Limitations

Several limitations could be identified in the completion of this systematic review. One particular limitation of this review was the scope of interventions. Since this review did not focus on comparing EMDR with a specific intervention and instead reviewed a variety of interventions; it is difficult to get a clear sense of which is more effective. Sample sizes in most of the studies were small and many

used self-reporting techniques to measure progress. This begs the question of the possibility of participants wanting to appear better or worse than they actually are. Third, the inclusion criteria only allowed for adults in an outpatient setting, this limited the study selection and the ability to transfer the results to a larger population.

Implications for Social Work Practice

As previously mentioned, it is important for clinicians to continue to develop knowledge and make use of different treatment modalities. This review proposes that while EMDR can be effective in the treatment of trauma, there are several other modalities that can be equally, if not more effective in treatment. Further review of training requirements and cost-effectiveness would be beneficial as findings of this review show minimal difference in outcome based on clinician training.

EMDR may be most beneficial when there is a need for more immediate symptom reduction and at the early onset of trauma. The use of homework in addition to the standard EMDR protocol may be more effective in a clinic setting, as opposed to situations when participant's lives are unstable such as a natural disaster or war. What works for one individual may not work for another, such as, an eclectic and open minded approach is essential in providing good patient care.

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Implications for Research

While the results were overall favorable for the use of EMDR in the treatment of trauma, there are several further research opportunities. Further research on comparison of EMDR to a specific intervention such as standard CBT or further comparison of EMDR and CBT based interventions may be beneficial. Also further research regarding co-morbidity and its impact on outcome as well as trauma and treatment history. This study also specifically focused on adults, further research on EMDR efficacy in children and adolescents and that impact on adulthood could be explored. Additionally, further research in longitudinal efficacy could be explored as the longest follow-up within the studies reviewed was 35 months.

Another consideration would be exploring additional treatment a participant engages in between post treatment and follow-up. A potential future research implication could be type of trauma. Focusing on a specific trauma population such as childhood abuse or vocational trauma could narrow the results and provided more accurate direction of when EMDR is most effective in practice. Further research in the areas of clinician experience and training may also be warranted along with different treatment variations.

This systematic review examined the efficacy of EMDR therapy in the treatment of trauma in the adult population. Fourteen articles were reviewed and themes were identified and discussed. EMDR presents as an effective treatment intervention for trauma while findings indicated the need for further research in

comparing EMDR with a specific intervention, particularly that of CBT. Findings also indicated the benefit of EMDR with early onset of trauma and in treatment settings that are unstable and the need for quick and efficient treatment is needed. While results of this systematic review found that EMDR can be equally effective as alternate interventions, further research on which settings, patient population and co-morbidities would provide additional insight for the clinician on when to administer. From a cost effectiveness viewpoint, further research on treatment model including number of sessions and training needed to effectively provide the intervention would assist healthcare settings to determine appropriate needs.

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