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Title: Treating Trauma in Addiction with EMDR: A Pilot Study.

Authors: Perez-Dandieu, Béatrice¹ (AUTHOR)
Tapia, Géraldine² (AUTHOR) *geraldine.tapia@u-bordeaux2.fr*

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Abstract: Objective: This study investigated the effects of standard eye movement desensitization and reprocessing (EMDR) protocol in chronically dependent patients. We propose that reprocessing traumatic memories with EMDR would lead to measurable changes of addiction symptoms. Method: Twelve patients with alcohol and/or drug dependency were randomly assigned to one of two treatment conditions: treatment as usual (TAU) or TAU plus eight sessions of EMDR (TAU+EMDR). Measures of PTSD symptoms, addiction symptoms, depression, anxiety, self-esteem, and alexithymia were included in this study. Results: The TAU+EMDR group showed a significant reduction in PTSD symptoms but not in addiction symptoms. EMDR treatment was also associated with a significant decrease in depressive symptoms, while patients receiving TAU showed no improvement in this area. The TAU+EMDR group also showed significant changes in self-esteem and alexithymia post-treatment. Conclusions: This study suggests that PTSD symptoms can be successfully treated with standard EMDR protocol in substance abuse patients. [ABSTRACT FROM AUTHOR]

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Author Affiliations: ¹Clinical Psychologist, Centre d'Etude et d'Information sur les Drogues (CEID), Bordeaux, France
²Associate Professor, EA4139, Laboratoire Psychologie, Santé et Qualité de Vie, Université Bordeaux Segalen, Bordeaux, France

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Treating Trauma in Addiction with EMDR: A Pilot Study.

Objective: This study investigated the effects of standard eye movement desensitization and reprocessing (EMDR) protocol in chronically dependent patients. We propose that reprocessing traumatic memories with EMDR would lead to measurable changes of addiction symptoms. **Method:** Twelve patients with alcohol and/or drug dependency were randomly assigned to one of two treatment conditions: treatment as usual (TAU) or TAU plus eight sessions of EMDR (TAU+EMDR). Measures of PTSD symptoms, addiction symptoms, depression, anxiety, self-esteem, and alexithymia were included in this study. **Results:** The TAU+EMDR group showed a significant reduction in PTSD symptoms but not in addiction symptoms. EMDR treatment was also associated with a significant decrease in depressive symptoms, while patients receiving TAU showed no improvement in this area. The TAU+EMDR group also showed significant changes in self-esteem and alexithymia post-treatment. **Conclusions:** This study suggests that PTSD symptoms can be successfully treated with standard EMDR protocol in substance abuse patients.

Keywords: substance abuse; PTSD; traumatic memory; treatment; EMDR

INTRODUCTION

Post-traumatic stress disorder (PTSD) and substance use disorder (SUD) are both severe disorders causing great psychological distress. Prevalence estimates for PTSD in SUD samples vary from 11% to 41% (Harrington & Newman [11]; Ouimette, Goodwin & Brown [21]; van Dam et al. [30]). Despite this variability, it is evident that the occurrence of PTSD among SUD patients is high. A number of authors have suggested a functional relationship between both disorders, which is largely supported by empirical

evidence (van Dam et al. [31]). PTSD symptoms negatively affect arousal levels and coping styles that increase the likelihood of substance abuse; substance abuse, in turn, increases the risk for future traumatic experiences, and withdrawal from substances can trigger PTSD symptoms (Stewart & Conrod [29]). This has clinical implications as patients with concurrent PTSD and SUD show higher symptom severities and worse treatment outcomes compared to patients with either disorder alone (Back et al. [3]; Najavits, Weiss & Shaw [19]; Ouimette, Brown & Najavits [20]). Thus, there are compelling reasons to develop and provide effective treatments for these conditions, particularly when they coexist.

Cognitive-behavioral therapy (CBT) is an evidence-based intervention for SUD. Empirically supported, cognitive-behavioral approaches include training in coping skills, relapse prevention, contingency management, and behavioral therapy (Emmelkamp & Vedel [8]). Treatment approaches for PTSD are often divided into traditional exposure-based therapies and eye movement desensitization and reprocessing (EMDR). The most recent version of practice guidelines from the International Society for Traumatic Stress Studies cites cognitive-behavioral treatments (including exposure therapy and cognitive-processing therapy) and EMDR as among the PTSD treatments evidencing the greatest empirical support (Foa et al. [9]). Recent research comparing EMDR to traditional exposure-based treatments of trauma has often found EMDR to be equally or more efficacious (Ironson et al. [14]; Lee, Taylor & Drummond [15]; Seidler & Wagner [22]).

Eye movement desensitization and reprocessing (EMDR) was initially advanced as a treatment for Posttraumatic Stress Disorder (PTSD), although its clinical applications have been extended considerably over the years. Because empirical evidence suggests that EMDR is effective in treating PTSD (despite the apparent unimportance of eye movements), more research is needed to understand the actual mechanism by which it works (Freeman [10]). The theory currently used to explain EMDR is called an adaptive information processing (AIP) model. The AIP model assumes "an inherent system in all of us that is physiologically geared to process information to a state of mental health" (Shapiro [25]). In EMDR, it is presumed that the AIP system leads to reduction in distress and/or negative emotions that can be stored as a result of upsetting experiences, leading to integrating upsetting information into a more adaptive, positive state. The AIP system may be hindered or blocked by trauma or other severe stress but also by the influence of psychoactive drugs. In fact, Shapiro reported on the use of EMDR in the treatment of addictions early in its development (Shapiro, Vogelmann-Sine & Sine [27]). The possible usefulness of EMDR with these disorders may also come from the high levels of traumatic exposure and PTSD in this population (Abel & O'Brien [1]). However, an apparent gap is the lack of studies investigating the effectiveness of EMDR in treatment intervention for comorbid SUD and PTSD disorders (van Dam et al. [31]).

Research on the clinical efficacy of EMDR with addiction is limited. Hase, Schallmayer, and Sack ([13]) published the only randomized control trial found in the literature. EMDR was implemented with or without "treatment as usual." Treatment as usual incorporated detoxification, aspects of motivational interviewing,

assessment of social support/adjustment, group treatment, relaxation training, and art therapy. Patients in the experimental group received treatment as usual plus two 1-hr sessions of EMDR that targeted the addiction memory, viewed as the core trigger of relapse. Their findings suggest that EMDR enhanced addiction treatment by decreasing cravings as well as experiences of relapse at one- and six-month intervals, respectively, when groups were compared. Marich ([16]) discussed a case exploring the use of EMDR with a cross-addicted female with a history of sexual assault who met criteria for alcohol dependence, cannabis dependence, sedative dependence, and PTSD. The author used the EMDR Standard Protocol (Shapiro [24]) to target shame-based experiences that impeded her recovery. Follow-up interviews indicated that the client had successfully maintained sobriety at 18 months. Abel and O'Brien ([1]) also discussed a case study exploring the use of EMDR treatment with a woman who had longstanding comorbid alcohol abuse and PTSD. Two-year follow-up after EMDR showed that the woman was successfully maintaining sobriety and that the PTSD continued in full remission. Another case study investigated the use of EMDR with three patients with severe addiction problems and PTSD, but findings are less accessible as the study was published in Dutch (van Rens et al. [32]).

The aim of the present study was to use the standard EMDR protocol among substance abuse patients. Unlike certain previous studies (e.g., Hase et al. [13]), we did not adapt the treatment protocol: the target for reprocessing was not the addiction memory but a specific traumatic memory. Therefore, this pilot gives an indication of whether patients with substance abuse disorder and comorbid PTSD can be treated effectively with routine treatments for PTSD as recommended by the guidelines. We also measured addiction severity in order to examine the effect of treatment on the present addiction symptoms. We propose that reprocessing traumatic memories with EMDR would lead to measurable changes of addiction symptoms. This would be expected to enhance overall treatment outcomes.

METHOD

Participants

Our sample consisted of 12 alcohol and/or drug-addicted women receiving social medical care for addiction problems within the same clinic (a French departmental Drug Information Centre). About three-quarter of them also received addiction treatment. Study participants were recruited by the same practitioner, who was qualified in addiction medicine. Inclusion criteria were (1) met the substance dependence criteria according to the DSM-IV diagnostic features for substance use disorder (APA [2]); (2) reported having experienced traumatic events; and (3) met the PTSD criteria according to the DSM-IV diagnostic features for PTSD (APA [2]). Participants with a history of psychosis or organic mental disorder, or those reporting continuous use of heroin or cocaine, were excluded.

A stratified randomization procedure was applied so that participants were assigned to treatment as usual (TAU) or to TAU plus eight sessions of EMDR (TAU + EMDR). TAU was provided according to the standards of the day-care center. EMDR was provided by the same qualified clinician according to the standard protocol (Shapiro [26]). After assignment, but prior to treatment, patients gave informed consent

and received additional information about the study and EMDR.

Measures

Primary outcome measures

The PTSD Checklist Specific (PCL-S; Weathers et al. [33]) was used to assess the PTSD diagnosis. The PCL is a 17-item, self-report checklist of PTSD symptoms based on DSM-IV criteria. The PCL has a variety of purposes, including screening individuals for PTSD, diagnosing PTSD, and monitoring symptom changes during and after treatment.

The Addiction Severity Index-Lite (ASI; McLellan et al. [17], [18]) is a shortened version of the ASI, which is a semi-structured assessment used to evaluate lifetime and recent (past 30 days) problem behaviors. The ASI-Lite is divided into seven separate composite scores: medical, employment, alcohol use, drug use, family, legal, and psychiatric. We focused on alcohol or drug use composite scores, since the aim of our research was to quantify alcohol and drug consumption before and after intervention. Furthermore, we only used the severity profile scale ranging from 0 to 9 to quantify alcohol and drug consumption.

Secondary outcome measures

Severity of depression and anxiety were evaluated pre- and post-treatment. Additional focus on other issues that trauma victims report—low self-esteem, guilt, self-blames, and difficulty recognizing and expressing emotions—were also evaluated. Since EMDR might be effective in restoring self-esteem and reducing alexithymia, those variables were evaluated pre - and post-treatment in the TAU+EMDR group.

The Beck Depression Inventory (BDI; Beck et al. [5]) and the State-Trait-Anxiety Inventory (STAI; Spielberger, Gorsuch & Luschene [28]) served as measures for depression and anxiety to compare TAU and TAU+EMDR. The BDI is a 21-item, self-report questionnaire used to evaluate cognitive and vegetative symptoms of depression. The STAI is a 40-item measure with two scales designed to assess state-anxiety and trait-anxiety.

Self-esteem was measured with Coopersmith's self-esteem inventory (SEI; Coopersmith [6]). It comprises 58 unambiguous trait-descriptive sentences to which subjects respond by indicating whether the sentences describe them or not (either "like me" or "unlike me"). The SEI has been widely utilized in research and clinical practice, with both individuals and groups. The validity and reliability of the instrument are well-established.

The Toronto Alexithymia Scale (TAS-20; Bagby, Parker & Taylor [4]) is a 20-item self-report measure. Each item is rated on a five-point Likert scale ranging from 1 (strong disagreement) to 5 (strong agreement). For this scale, a three-factor structure was proposed: *difficulty identifying feelings* (DIF), *difficulty describing feelings* (DDF), and *externally oriented thinking* (EOT).

Procedure

Potential participants were screened for PTSD with the PCL-S. If PTSD was diagnosed, and once informed consent was obtained, the remaining baseline measurements were administered.

Treatment as Usual

All participants received TAU, which included clinical interviews with the addiction specialist, baclofen administration (for the treatment of alcohol craving), and anxiolytics/antidepressants administration (for reducing anxiety and negative thoughts). Tau also included heroin substitute treatment (methadone and buprenorphine), medications for PTSD treatment if required, and psycho-educational interviews with social workers. Last, TAU included social worker support to cope with the demands of everyday life and medical care with nurses.

EMDR

Participants received eight EMDR sessions over six months. In the first month, patients received three EMDR sessions. Thereafter, one monthly EMDR session was provided. After a maximum of eight sessions, post-measurements were taken. During the EMDR therapy, treatment as usual was continued. We used the standard eight-phase EMDR procedure as adapted into French (Cornil [7]) (see Shapiro ([23]) for a detailed description of the EMDR procedure). The patient is asked to isolate a visual representation (a single picture) of a traumatic memory. The therapist and patient determine what belief statement currently applies to that target image; e.g., "I am powerless." The patient is then asked to form a contradictory belief statement that he would prefer; e.g., "I am now in control." The actual desensitization then starts. Tension is built up by asking the patient to hold the traumatic memory, negative statement, evoked emotion, and area of body where the emotion is experienced while visually focusing on the rapid eye movement of the clinician's fingers. After a set of 25 eye movements, the patient is asked to briefly associate about what comes to his awareness. A new set is then presented. This procedure is repeated until no new associations come to the patient's awareness. The patient is then asked to focus on the target image, after which subjective units of disturbance scores are asked. When this score has gone down to nil, the installation phase is started. The positive contradictory statement is then "installed." The patient is asked how valid the positive cognition feels at that moment (1¼ completely untrue to 7¼ completely true). Sets are repeated until the positive cognition feels completely true. Then, the patient is asked to perform a body scan (feeling whether there is still any tension in the body) while concentrating on the target image and on the positive cognition. Sets are repeated until the body feels completely relaxed. The EMDR ends with a positive closure in which the patient is asked to verbalize the most positive thing that he has learned about himself in that session with respect to the trauma that was treated.

After each set of 25 eye movements, the therapist asks the patient to rate the strength of both the distressing memory and his belief in the positive cognition. Other types of bilateral stimulation can be used, such as tapping or alternating sounds.

Statistical Analysis

Descriptive statistics were used to describe sample characteristics at baseline. Paired within sample T-tests for means were performed to assess change in scores on clinical measures. The baseline scores on the variables were normally distributed and therefore parametrically analyzed using T-Tests.

RESULTS

Characteristics of the Samples

Table 1 displays the characteristics of the TAU and TAU + EMDR groups.

TABLE 1 Characteristics of the TAU and TAU + EMDR Groups

		Frequency per group	
		TAU	TAU + EMDR
Trauma causing PTSD	Sexual abuse	4	3
	Physical abuse or Physical threatening or Negligence	2	2
	Emotional abuse	0	1
Gender	Female	6	6
Living status	With partner and child(ren)	0	1
	With partner	2	3
	Alone or independently	4	2
	In sheltered housing	0	1
Substance dependence	Alcohol	4	1
	Cannabis	1	1
	Poly-toxicomania	1	4
Substitution Medication	Methadone	4	4
	Buprenorphine	1	1
	Other	1	1

Baseline

The TAU and TAU+EMDR groups were comparable for age, duration of addiction symptoms, duration of PTSD symptoms, number of previous detoxification treatments, number of previous rehabilitation treatments, and duration of substitution treatment. The groups were also comparable for all clinical measures: severity of addiction, PTSD, depression, and anxiety. Measures of personality (self-esteem and alexithymia) did not show any statistically significant differences (see Table 2).

TABLE 2 Baseline Measures of the TAU and TAU + EMDR Groups by Questionnaire Data

	TAU (N = 6)		TAU + EMDR (N = 6)		Test Value	p	Effect size	Confidence Interval
	M	SD	M	SD				
Age (years)	29.33	2.94	29.67	3.14	<1	.85	0.004	[-3.58, 4.25]

Duration of addiction symptoms (years)	11.83	3.06	11.173.06	<1	.7140.014	[-4.60, 3.27]
Duration of PTSD symptoms (years)	18	5.40	21.335.57	1.11	.3180.1	[-3.73, 10.39]
Duration of substitution treatment (months)	2.58	1.43	2.47	1.47	<1	.8920.002 [-1.98, 1.75]
Number of detoxification treatments	1	-	2	-	<1	.5490.037 [-0.43, 0.76]
Number of rehabilitation treatments	0	-	0	-	-	-
PCL-S	54.67	7.53	59.837.25	1.47	.2540.128	[-4.34, 14.67]
ASI	5.50	2.16	5.33	1.37	<1	.8760.003 [-2.50, 2.16]
BDI-2	15.5	5.86	17.834.4	<1	.4530.057	[-4.33, 9.00]
STAI-state	54.17	5.5	61	10.082.11	.1770.174	[-3.64, 17.31]
SEI	27.5	4.76	21.336.95	3.21	.1030.243	[-13.83, 1.50]
TAS-20	43.5	6.95	51	14.421.32	.2780.116	[-7.06, 22.06]

3 Note. TAU: Treatment As Usual; EMDR: Eye-Movement Desensitization and Reprocessing; Age: age in years; Detoxification: number of previous inpatient detoxification treatments; Rehabilitation: number of previous rehabilitation programs; ASI: Addiction Severity Index; PCL-S: Posttraumatic Checklist Specific; BDI: Beck Depression Inventory; STAI-state: State-Trait Anxiety Inventory Scale State Form; SEI: Self-Esteem Inventory; TAS: Toronto Alexithymia Scale; Treatment: duration of treatment in days; Test-value: Chi2 for categorical variables, *T* for continuous variables.

Efficacy

Primary outcome measures

The hypothesis in this study was that reprocessing traumatic memories with EMDR would lead to measurable changes in addiction symptoms; therefore the most relevant measures for analysis were the PCL-S and ASI. Compared to pre-treatment, post-treatment scores of PCL-S revealed a significant improvement in the TAU+EMDR treatment group ($T = 4.211, p = .008$), while no decrease in PTSD symptoms was noticed in the TAU treatment group ($T = -0.945, p = 0.389$) (see Table 3). Between TAU and TAU+EMDR, the difference in PCL-S scores post-treatment was statistically significant ($T = 9.60, p = .011$). Compared to pre-treatment, post-treatment scores of ASI revealed that neither the TAU+EMDR treatment group ($T = 1.19, p = 0.287$) nor the TAU treatment group ($T = -1, p = 0.363$) reduced in alcohol and substance addiction. Analysis of the ASI scores also revealed that there was no significant difference between TAU and TAU+EMDR ($T = 1.46, p = 0.25$).

TABLE 3 Changes in clinical variables in TAU and TAU+EMDR

Group	Pre-treatment		Post-treatment		Significance Pre-/Post-treatment	
	M	SD	M	SD	Test value	Significance
Clinical variables						
PCL-S						

TAU	54.67	7.53	56.5	2.55	-0.945	0.389
TAU + EMDR	59.83	7.25	35.17	13.424	2.211	0.008
ASI						
TAU	5.50	2.16	5.55	2.55	-1	0.363
TAU + EMDR	5.33	1.37	4.17	2.04	1.19	0.287
BDI-2						
TAU	15.5	5.86	17.5	3.78	-2.07	0.093
TAU + EMDR	17.83	4.4	7.83	5.03	4.385	0.007
STAI-state						
TAU	54.17	5.5	56	5.21	-0.43	0.684
TAU + EMDR	61	10.08	42.33	18.572	2.653	0.045
Personality variables						
SEI						
TAU	27.5	4.76	-	-	-	-
TAU+EMDR	21.33	6.95	34	9,32	-3.372	0.012
TAS-20						
TAU	43.5	6.95	-	-	-	-
TAU+EMDR	51	14.42	40.17	6,73	2.312	0.069

4 Note. TAU: Treatment As Usual; EMDR: Eye-Movement Desensitization and Reprocessing; ASI: Addiction Severity Index; PCL-S: Posttraumatic Checklist Specific; BDI: Beck Depression Inventory; STAI-state: State-Trait Anxiety Inventory Scale State Form; SEI: Self-Esteem Inventory; TAS: Toronto Alexithymia Scale; Test-value: *T* for paired samples.

Secondary outcome measures

Compared to pre-treatment, post-treatment scores of the BDI revealed a significant reduction in the TAU+EMDR treatment group ($T = 4.385$, $p = .007$). Between TAU and TAU+EMDR, the difference in BDI scores post-treatment was statistically significant ($T = 14.134$, $p = .004$). Compared to pre-treatment, post-treatment scores of the STAI revealed a significant reduction in the TAU+EMDR treatment group ($T = 2.653$, $p = .045$), while no reduction in state anxiety was noticed in the TAU treatment group (-0.43 , $p = .684$). Between TAU and TAU+EMDR, the difference in STAI scores post-treatment was not statistically significant ($T = 3.01$, $p = .113$).

Compared to pre-treatment, post-treatment scores of the SEI revealed a significant increase in the TAU+EMDR treatment group ($T = -3.372$, $p = .012$). Scores of the TAS-20 showed no significant difference between pre-treatment and post-treatment in the TAU+EMDR treatment group ($T = 2.312$, $p = .069$).

DISCUSSION

The current study aimed to use the standard EMDR protocol for treating addictions. In this study, reprocessing of earlier (traumatic) memories was followed by a significant decrease in PTSD, depression,

and anxiety post-treatment. This finding is also reflected in the between-group difference in PTSD and depression symptoms, as patients receiving EMDR scored lower on measures of PTSD and depression than patients not receiving EMDR. However, EMDR treatment was not associated with a significant decrease in alcohol and drug use. Compared to TAU, patients who received EMDR in addition to TAU did not report a significant decrease in substance abuse after termination of treatment. Results also showed that the use of the standard EMDR protocol was followed by a significant increase in self-esteem.

Although many substance-abuse therapists believe a client should be substance-free before engaging in trauma work (Hase [12]; Zweben, Clark & Smith [34]), this study demonstrated that a decrease in PTSD symptoms can occur beyond abstinence. This work also revealed that the reprocessing of traumatic memories increases the likelihood of adaptive behavior by increasing self-esteem and decreasing depression and anxiety. This result reinforces the idea that EMDR may help clients to bring up memories in a more adaptive perspective and to have a more functional attitude about the present and future (Shapiro et al. [27]).

We did not observe a reduction in alcohol and drug use after EMDR treatment in our study. However, a previous study found that reprocessing the addiction memory using a set of modified EMDR procedures was followed by a significant decrease in craving for alcohol post-treatment (Hase et al. [13]). In the current study, reprocessing traumatic memories may not have been sufficient to reduce alcohol and drug use. This study showed that reprocessing traumatic memories in a SUD sample reduced PTSD symptoms, indicating that EMDR treatment works to treat PTSD in substance abusers. We propose that reprocessing both traumatic and addiction memories using an EMDR procedure should reduce PTSD symptoms along with alcohol and drug consumption. This proposal might give us insight into the need for more extensive research focused on both addiction and traumatic memories to determine the relative impact of both on addiction symptoms.

This study met several methodological limitations. The sample size was small, and our clinical sample was all female. Treatment was applied by the same person evaluating the study, which might have biased the results. Because standardized measures of social support were not used, we were not able to quantify the type and duration of social support.

It is hoped that the use of the standard EMDR protocol for treating addicted patients can be replicated in a larger sample of patients suffering from substance-use disorders. Providing psychotherapeutic interventions such as EMDR at early stages during inpatient treatment for addicted patients may enhance overall treatment outcomes.

Footnotes

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By Béatrice Perez-Dandieu and Géraldine Tapia

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