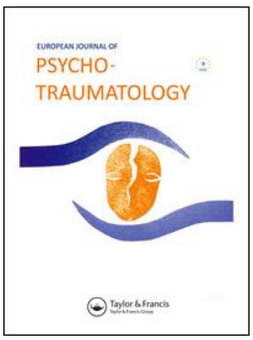

European Journal of Psychotraumatology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/zept20

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To cite this article: Laurian Hafkemeijer , Ad de Jongh , Job van der Palen & Annemieke Starrenburg (2020) Eye movement desensitization and reprocessing (EMDR) in patients with a personality disorder, European Journal of Psychotraumatology, 11:1, 1838777, DOI: 10.1080/20008198.2020.1838777

To link to this article: https://doi.org/10.1080/20008198.2020.1838777

Published online: 19 Nov 2020.

EUROPEAN JOURNAL OF PSYCHOTRAUMATOLOGY
2020, VOL. 11, 1838777
https://doi.org/10.1080/20008198.2020.1838777

EUROPEAN JOURNAL OF PSYCHO-TRAUMATOLOGY
THE OFFICIAL JOURNAL OF THE EUROPEAN SOCIETY FOR TRAUMATIC STRESS STUDIES

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Eye movement desensitization and reprocessing (EMDR) in patients with a personality disorder

Laurian Hafkemeijer [a], Ad de Jongh [b,c,d,e,f], Job van der Palen [g] and Annemieke Starrenburg [a]

[a]Department of Adult Psychiatry, GGZ Delfland, Delft, The Netherlands; [b]Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam and VU University Amsterdam, Amsterdam, The Netherlands; [c]Research Department, PSYTREC, Bilthoven, The Netherlands; [d]School of Health Sciences, Salford University, Manchester, UK; [e]Institute of Health and Society, University of Worcester, Worcester, UK; [f]School of Psychology, Queen's University Belfast, Belfast, Northern Ireland; [g]Department of Research Methodology, Measurement and Data Analysis, University of Twente, Enschede & Department of Epidemiology, Medisch Spectrum Twente, Enschede, The Netherlands

ABSTRACT

Background: Little is known about the effects of targeting memories of adverse (childhood) events in people with a personality disorder (PD).
Objective: Determining the effectiveness of brief EMDR therapy in individuals with PD.
Method: In a randomized-controlled trial, 97 outpatients with a PD as main diagnosis were allocated to either five (90 minutes) sessions of EMDR therapy (n = 51) or a waiting list (WL) control condition (n = 46) followed by 3 months of treatment as usual for their PD. Individuals with posttraumatic stress disorder (PTSD) were excluded. Measurements were performed on psychological symptoms, psychological distress, and personality dysfunctioning. Outcomes were compared at baseline, post-treatment, and at 3-month follow up. Data were analysed as intent-to-treat with linear mixed models.
Results: EMDR therapy yielded significant improvements with medium to large effect sizes for the primary outcomes after treatment, i.e. psychological symptoms (EMDR: d =.42; control group: d =.07), psychological distress (EMDR: d =.69; control group: d =.29), and personality functioning (EMDR: d =.41; control group: d = −.10) within groups. At 3-month follow-up, after 3 months of TAU, improvements were maintained. Significant differences were found between both groups regarding all outcome measures in favour of the EMDR group at post-treatment (ds between −.62 and −.65), and at follow-up, after 3 months of TAU (ds between −.45 and −.53).
Conclusions: The results suggest that EMDR therapy can be beneficial in the treatment of patients with PDs. More rigorous outcome research examining long-term effects and using a longer treatment track is warranted.

Desensibilización y reprocesamiento por movimiento ocular (EMDR) en pacientes con un trastorno de la personalidad.

Antecedentes: Se sabe poco acerca del efecto que tiene la focalización de los recuerdos de los eventos adversos (de la infancia) en las personas con un trastorno de la personalidad (PD, por sus siglas en inglés).
Objetivo: Determinar la eficacia de la terapia breve EMDR en individuos con PD.
Método: En un ensayo controlado aleatorio, 97 pacientes ambulatorios con una PD como diagnóstico principal fueron asignados a cinco sesiones (de 90 minutos c/u) de terapia EMDR (n=51) o a una condición de control en lista de espera (WL, por sus siglas en inglés) (n=46) seguidas de tres meses de tratamiento habitual para su PD. Se excluyeron los individuos con trastorno de estrés postraumático. Se realizaron mediciones de los síntomas psicológicos, malestar psicológico, y disfunción de la personalidad. Los resultados se compararon al inicio, después del tratamiento y a los 3 meses de seguimiento. Los datos se analizaron como intención de tratar con modelos lineales mixtos.
Resultados: La terapia EMDR produjo mejoras significativas con tamaños de efecto medianos a grandes para los resultados primarios después del tratamiento, es decir, síntomas psicológicos (EMDR: d =.42; grupo control: d =.07), malestar psicológico (EMDR: d =.69; grupo control: d =.29), y disfunción de la personalidad (EMDR: d =.41; grupo control: d = −.10) dentro de los grupos. A los 3 meses de seguimiento, después de tres meses de TAU, se mantuvieron las mejoras. Se encontraron diferencias significativas entre ambos grupos con respecto a todas las medidas de resultados a favour del grupo EMDR en el postratamiento (ds entre −.62 y −.65) y el seguimiento (ds entre 0,21 y 0,25), después de tres meses de TAU (ds entre −.45 y −.53).
Conclusiones: Los resultados sugieren que la terapia EMDR puede ser beneficiosa para los pacientes con PD. Se recomienda una investigación más estricta de los resultados, que examine los efectos a largo plazo y utilice una duración más larga del tratamiento.

ARTICLE HISTORY
Received 28 February 2020
Revised 4 September 2020
Accepted 10 September 2020

KEY WORDS
Personality disorder; EMDR; trauma; adverse events

PALABRAS CLAVE
trastorno de personalidad; EMDR; trauma; eventos adversos

关键词
人格障碍; EMDR; 创伤; 不良事件

HIGHLIGHTS

- The results of this study show that abrief intensive trauma-focused treatment (EMDR) can be beneficial for individuals with personality disorders to reduce psychological symptoms and to improve their functioning.

CONTACT Laurian Hafkemeijer l.hafkemeijer@ggz-delfland.nl GGZ Delfland, Delft 2612, The Netherlands

人格障碍患者中的眼动脱敏再加工（EMDR）

方法:在一项随机对照试验中，将以PD为主要诊断的97位门诊患者分为接受5次（90分钟）EMDR的治疗组（*n* = 51）或接受3个月往常PD治疗的等待名单（WL）对照组（*n* = 46）。排除了患有创伤后应激障碍（PTSD）的个体。对心理症状，心理困扰和人格障碍进行了测量。比较基线，治疗后和3个月随访时的结果。使用线性混合模型将对数据进行意向性分析。
结果:EMDR疗法在治疗后的主要结果上取得了中等至较大效应量的显著改善，即组内的心理症状（EMDR组:d = 0.42;对照组:d =.07），心理困扰（EMDR组:d = 0.69;对照组:d =.29），人格失调（EMDR:d =.41;对照组:d = −.10）。在3个月TAU后的3个月的随访时，经过，改善得到维持。两组在所有结果指标方面均存在显著差异，在治疗后（d在-0.6至-.65之间）和在TAU三个月后随访时（d在-.45和-.53之间）EMDR组都表现更加。
结论:结果表明，EMDR疗法可有效治疗PD患者。需要进行更严格的结果研究，以考查长期效果并使用更长的治疗途径。

1. Introduction

Personality disorders (PDs) are one of the most common mental health conditions. Approximately 3–15% (Bamelis, Evers, Spinhoven, & Arntz, 2014) of the general population and 40–50% of patients in mental health-care settings (Newton-Howes et al., 2010) meet the diagnostic criteria for a PD regardless whether the PD diagnosis is a primary or secondary (i.e. comorbid) diagnosis. Several studies indicate poorer interpersonal and occupational functioning in patients with PDs as compared to patients with other psychiatric disorders (Oltmanns, Melley, & Turkheimer, 2002). Accordingly, individuals with PDs exert a high individual, societal and economic burden of disease (Soeteman, Hakkaart-van Roijen, Verheul, & Busschbach, 2008), causing a strong demand on psychiatric, general health and social care services making efficient and effective treatment a priority.

One of the factors that has been found to be highly associated with the development of personality pathology is a history of distressing and traumatic life experiences, such as emotional or physical abuse (Lobbestael, Arntz, & Bernstein, 2010). Rates of childhood maltreatment among individuals with PDs are high, with 73% of their sample reporting abuse and 82% reporting neglect (Battle et al., 2004). Research shows that also events that do not specifically fulfill the A-criterion of a posttraumatic stress disorder (PTSD) classification are associated with core features of PD (e.g., Kaplan, Pelcovitz, & Labruna, 1999). For example, Porter et al. (2020) found both emotional abuse (OR: 38.1) and neglect (OR: 17.7) to be strongly associated with the presence of borderline personality disorder (BPD). Given the prevalence rate of PTSD in patients diagnosed with PD other than BPD (e.g., 22%; Zanarini et al., 1998) it is likely that a considerable proportion of patients with a PD do not meet diagnostic criteria for PTSD.

With regard to the treatment of PDs, several studies evaluated the outcome of treatment that pertained to traumatic events underlying PTSD thereby examining the effects on comorbid PDs (e.g., Bovin, Wolf, & Resick, 2017; Markowitz et al., 2015), particularly borderline personality disorder (BPD; e.g., Harned, Korslund, & Linehan, 2014). These studies showed that change in PTSD severity was associated with change in symptom severity of these disorders, in comorbid PD features and/or loss of PD diagnosis.

One of the evidence-based therapies that has been found effective in treating the psychological consequences of exposure to adverse childhood events is eye movement desensitization and reprocessing (EMDR) therapy (De Jongh, Amann, Hofmann, Farrell, & Lee, 2019; Van Veen et al. 2015; World Health Organization, 2013). The effects of EMDR therapy on symptoms of PDs has been studied in a sample of patients who were also diagnosed with PTSD (Slotema, van den Berg, Driessen, Wilhelmus, & Franken, 2019). The results of this uncontrolled pilot study showed that the application of EMDR therapy was associated with a significant reduction of PTSD symptom. However, the effects of EMDR therapy on symptoms characteristic of patients' PD were not examined. More generally, whether patients with a PD respond to evidence-based therapy focused on memories of adverse events not underlying PTSD is largely unknown.

The purpose of the present study was to evaluate the effectiveness of EMDR therapy on psychological symptoms and functioning in patients with a PD using a randomized-controlled trial design. We hypothesized that patients' global level of psychological symptoms, psychological distress and personality dysfunctioning would decrease associated with the application of EMDR therapy (i.e. aimed at the resolution of memories of adverse, non-criterion A events), in comparison with a control group not receiving EMDR. In addition, it was hypothesized that these changes would be maintained at follow-up, after 3 months of treatment of usual (TAU).

2. Methods

2.1. Participants

Patients were recruited at three outpatient clinics of a specialized psychiatric institute in the Netherlands,

GGZ Delfland (locations Delft, Naaldwijk and Ypenburg). A sample of 97 patients with a PD diagnosed following the criteria of the Diagnostic and Statistical Manual of mental disorders (DSM-5) participated in the study. Patients were eligible for participation if they met the following inclusion criteria: 1) a PD as primary diagnosis according to the DSM-5 criteria; 2) between 18 and 65 years old. Exclusion criteria were 1) a diagnosis of PTSD, 2) a high suicide risk as operationalized by a suicide attempt within the past 6 months, current suicidal intention or severe automutilation, and 3) an inability to read or write the Dutch language. Comorbidity of other mental disorders was not an exclusion criterion. Patients in addiction withdrawal were not included. The secondary diagnoses of the included patients varied: the most prevalent diagnoses were mood disorders, anxiety disorders, personality disorders and ADHD. Thirty-three percent of the patients had three or more secondary diagnoses, 37% had two secondary diagnoses and 30% had one secondary diagnosis. During the study, patients did not receive any other adjacent treatments, except continuation of pharmacological treatment. During the study no changes in drug treatment were made and the posology of drug treatment was stable before inclusion. Participants were compensated with travelling costs to the appointments. Inclusion and follow-up continued from November 2017 until July 2019.

2.2. Design and randomization

A randomized-controlled trial was carried out in which patients were allocated to either five sessions EMDR therapy (5 weekly sessions of 90 minutes, 7.5 hours of EMDR therapy in total) or a waiting list control condition (a period of 5 weeks). After five weeks of EMDR or five weeks of waiting list, patients in both conditions received TAU for their PD. After 3 months of TAU patients in both groups completed follow-up measurements. All procedures involving the trial complied with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008, and were approved by The Medical Ethics Committee South West Holland, registered as NL61845.098.17. Although for various reasons we were only able to complete the registration of the trial after the start of the study (https://www.trialregister.nl/trial/7470) the purpose, aims, hypotheses, study design, data collection, analytical strategy and planned statistical analyses have remained unchanged since the beginning of the study. Allocation was performed by a blocked stratified randomization with a block size of four and stratification by PD cluster. Actual randomization was performed by an independent secretary and researchers were blind to the allocation order. Included patients received a research number on order of entry.

2.3. Procedures

Eligible patients were informed about the study by their mental health professional. If a patient was interested the researcher contacted the patient to check the exclusion and inclusion criteria and to answer possible questions. Assessments were conducted after randomization at baseline, post-treatment and at three-month follow up.

The Structured Clinical Interview DSM-5 (SCID-5; First, Williams, Karg, & Spitzer, 2016) was administered by independent and trained psychologists to classify a PD. PTSD was ruled out using the MINI International Neuropsychiatric Interview (Sheehan et al., 1997). Next, a written informed consent was obtained from all patients and patients were randomly assigned to either the experimental group or the control group. Patients were asked permission to record the EMDR sessions, in order to address adherence to the EMDR standard protocol (De Jongh & Ten Broeke, 2012). After the therapy or the waiting period, patients received treatment as usual for their PD.

The participants in the EMDR group filled in the questionnaires at the treatment location. Patients in the control group completed the questionnaires in a secured online system from their home location. The follow-up measurement was filled in at home, patients were prompted by telephone and email to complete the questionnaires. Adverse events such as severe suicidal ideation, crisis contacts or admission to a hospital were monitored by the therapists.

3. Measures

3.1. Outcome measures

Severity of psychological symptoms was measured with the Brief Symptom Inventory (BSI; de Beurs & Zitman, 2005) at baseline, post-treatment and at 3 months follow up in the experimental group, or at baseline, after 5 weeks and at 3 month follow-up in the control group. The BSI includes three global indices of distress (Global Severity Index, Positive Symptom Distress, and Positive Symptom Total), which measure the overall psychological distress level, the intensity of symptoms, and the number of self-reported symptoms. In this study, the total scores were analysed. Higher total scores reflect higher level of symptoms.

Level of psychological distress was measured with the Outcome Questionnaire-45 (OQ-45, Lambert & Finch, 1999). This questionnaire measures three domains of functioning: symptom distress, interpersonal relations and social role performance). The OQ-45 consists of 45 items and is a self-report scale with good psychometric properties (De Jong et al., 2007). Higher total scores reflect a higher level of psychological distress. Total levels of psychological distress were measured at baseline, post-treatment and after 3 months in the experimental group, or at baseline, after 5 weeks and after 3 month follow-up in the control group.

During the trial, it was decided to also index global level of personality dysfunctioning. This means that an already randomized subsample filled out the General Assessment of Personality Disorder (GAPD; Berghuis, 2007; Livesley, 2006). The GAPD is a self-report questionnaire designed to evaluate general personality dysfunctioning. The measure evaluates two major components of disordered personality (i.e. self or identity problems and interpersonal dysfunction) with higher scores reflecting a higher level of dysfunctioning.

3.2. Treatment

EMDR therapy is a standardized, eight-phase, trauma-focused therapy consisting of dosed, sequentially applied attention directed at the disturbing memory, while at the same time the attention of the patient is directed to another concurrent (dual-attention) task. Typically, this task involves patients following the therapist's moving fingers with their eyes (for a description of EMDR therapy see: https://www.emdria.org/about-emdr-therapy/). In the present study the standard eight-phase EMDR protocol (De Jongh & Ten Broeke, 2012; Shapiro, 2018) was applied. Patients were first informed about EMDR therapy, memories were identified, and the course of current symptoms was evaluated. Next, a case conceptualization was conducted based upon patient's current symptoms, specifying memories of the aetiological and/or aggravating disturbing events using a timeline to structure the order of the memories to be targeted (i.e. 'First method'; De Jongh, Ten Broeke, & Meijer, 2010). For example, if symptoms of fear of abandonment were most prominent in someone's PD, the memories of events that were assumed to play a key role in the acquisition and maintenance of this fear, and evoked distress, were identified, selected and processed in the order in which these events had taken place over time'. After having processed one memory (i.e. SUD = 0; VOC = 7), EMDR therapy continued by targeting the following memory on the timeline. In that way all memories that were considered to contribute to a patient's current symptoms were targeted using the EMDR standard protocol.

Immediately after randomization, the baseline measurement took place for both groups. Next, the EMDR group received five weekly sessions of EMDR, did the post-treatment assessment after these five weeks, followed by 3 months of TAU and subsequently did the follow-up assessment. Duration of the EMDR sessions was 90 minutes. An average of five memories per person in total were targeted. The control group was five weeks on a waiting list (for the TAU), and did the assessment after these five weeks, followed by 3 months of TAU, and subsequently did the follow-up assessment. Treatment as usual (TAU) was not standardized. Different treatments were indicated. Most patients in both groups received schema-focused therapy (48.3%). Other patients received Competetive Memory Training COMET (Korrelboom, Marissen, & van Assendelft, 2011); 11.5%), emotion regulation therapy (11.5%), interpersonal sensitivity training (5.7%), mentalization-based therapy (2.3%), cognitive behavioural therapy (2.3%), young adults psychodynamic group (4.6%), another kind of therapy (2.3%) or no therapy (11.5%). The various types of TAU did not significantly differ per group (p = .16). In case of crisis, patients could contact their therapist.

3.3. Treatment training and integrity

Twelve therapists in total were involved in this study. They were trained and experienced in administering EMDR therapy and completed an EMDR Europe accredited training organized by the Dutch EMDR Association. During the study all therapists participated in supervision sessions in a small group, led by registered VEN supervisor and EMDR trainer (AdJ). They received feedback on the recorded therapy sessions and different questions were addressed. Also, adherence to the EMDR protocol was verified. When necessary, the first author had contact with the therapists about progress of the sessions and answered questions about adherence to the protocol.

4. Statistical analysis

A priori power analyses based on the LMM procedure indicated that 86 participants (43 per group) were needed to have 95% power to detect an effect size (Cohen's d) of .25 between the EMDR condition and control group with an alpha of .05 and a power of .95. A priori, additional patients were included to compensate in case attrition would occur. Baseline differences were analysed using parametric and nonparametric tests, as appropriate. Between-group comparisons on primary and secondary outcomes were carried out per the intention-to-treat principle using linear-mixed models (LMM) including all randomized participants

regardless of missing data. A random intercept was included in the models. Within-group comparisons between baseline values and follow-up values were corrected for multiple testing using the Holm-Bonferroni method. Between-group differences at the two follow-up moments were also corrected for multiple testing using the Holm-Bonferroni method. In the linear mixed model analysis, we have used the method of Sidak to correct for multiple comparisons. The covariance structure that gave the best model fit was chosen, based on Akaike's Information Criterion (autoregressive). Model-selection was performed on each outcome measure. The main parameter of interest was the group by time interaction, indicating a different outcome pattern over time between both groups. *P*-values of < .05 were considered statistically significant. All tests were two-tailed. Given that Cohen's *d* was used to assess the magnitude of effect, an effect size of .2 or less was considered as a small effect, .5 as a medium effect, and .8 or greater as a large effect. Effect sizes were calculated by dividing the mean difference (within and between groups) by the pooled standard deviation. Data analysis was performed with the SPSS version 25.

5. Results

5.1. Patient flow and sample characteristics

Figure 1 shows the flow chart of participants through the trial, the dropout and loss to follow-up. No significant differences were found between the two groups in any of the baseline characteristics (Table 1) or the baseline scores. No significant differences in drug therapy between the two groups were found.

5.2. Effectiveness of treatment

In both groups prior to the follow-up measurement patients received an average of five sessions of the indicated treatment as usual for their personality disorder (PD). Figure 2 shows the results of the Linear Mixed Model (LMM) analysis of the primary

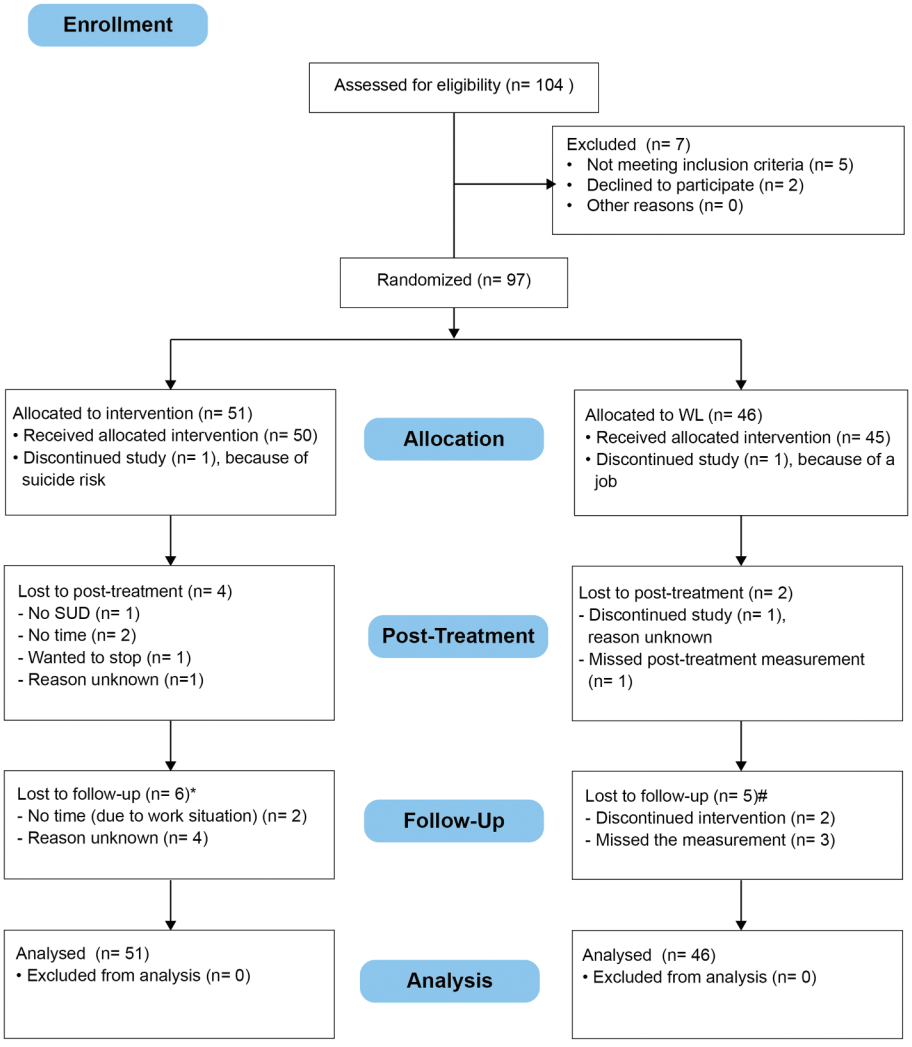

Figure 1. Participant flow.

EMDR, eye movement desensitization and reprocessing therapy; SUD, subjective unit of disturbance

Table 1. Demographic characteristics divided by allocated group (n = 97) and comparisons between groups.

Variable	Control group	EMDR group*	Statistic
Mean age (years)	32.85 (range 18–63)	33.67 (range 18–64)	F (1) = 0.11, p = .75
Gender			X^2 (1) = 0.14, p = .71
Male	17 (37%)	17 (33.3%)	
Female	29 (63%)	34 (66.7%)	
Personality Cluster*	14 (30.4%)	15 (29.4%)	X^2 (2) = 0.02, p = .99
B	18 (39.1%)	20 (32.2%)	
C	14 (30.4%)	16 (31.4%)	
OS			
DSM-5 personality classification	10 (21.7%)	13 (25.5%)	X^2 (6) = 6.30, p = .39
Borderline PD*	8 (17.4%)	12 (23.5%)	
Avoidant PD	1 (2.2%)	1 (2%)	
Histrionic PD	3 (6.5%)	0	
Narcistic PD	14 (30.4%)	19 (37.3%)	
PD OS	9 (19.6%)	6 (11.8%)	
Obsessive compulsive PD	1 (2.2%)	0	
Dependent PD			

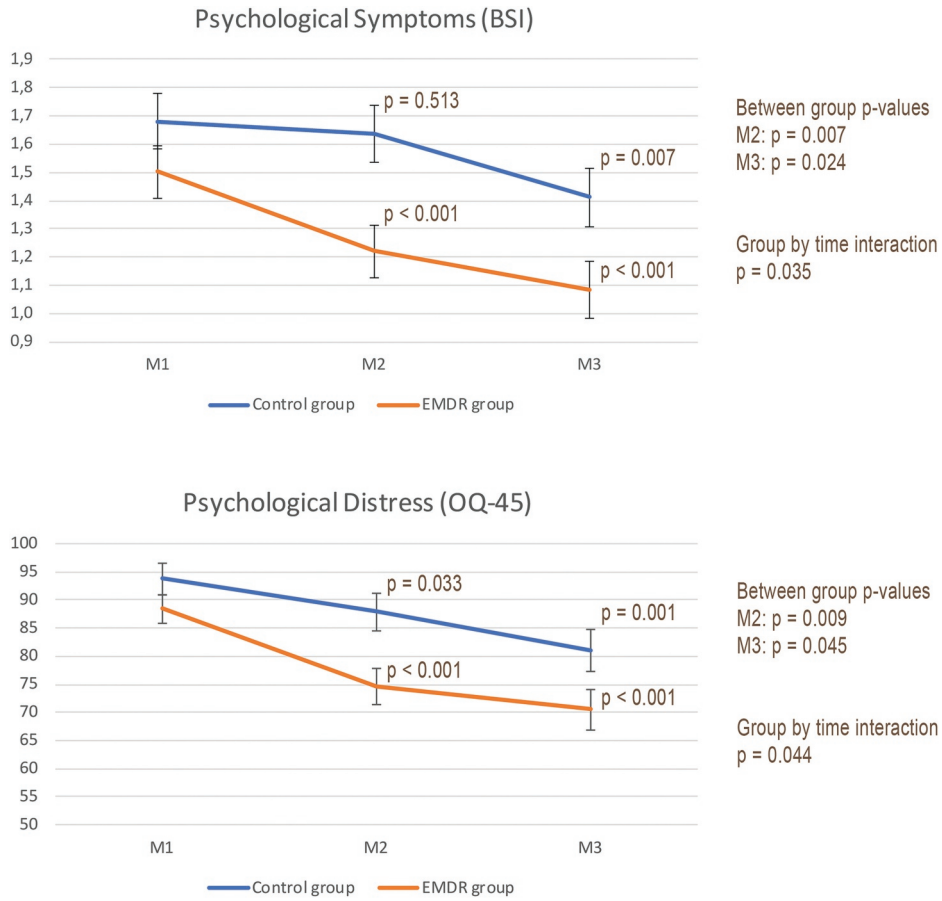

Figure 2. Differences between the groups on psychological symptoms and psychological distress over time measured with the BSI and OQ-45.

*M1 = baseline measurement; M2 = post-treatment measurement; M3 = 3-month follow-up measurement; BSI = Brief Symptom Inventory; OQ-45 = Outcome Questionnaire-45

and secondary outcome: psychological symptoms and psychological distress over time and the statistics for the within-groups as well as the between groups differences. Table 2 presents the means and standard deviations, LMM test statistics and effect sizes (d) at post-treatment and at 3 months of follow up for the two outcome measures. We also present the p-value for the group by time interaction, analysed by the linear mixed model analysis. Because of the small number of PDs within each type of PD, we did not conduct any additional analyses between the different PDs. Table 3 presents the relevant parameter estimates of the fixed effects of the LMM analysis.

Table 2. Scores (mean (SD)) at baseline, post-treatment and 3 months follow, group by time interaction and between-group effect sizes.

		EMDR group			Control group			Group by time interaction	Effect sizes of EMDR vs Control group					
									At post-treatment (M2)			At 3 months of FU (M3)		
Measures*		Baseline (M1) mean (Sd)	Post-treatment (M2) mean (Sd)	3 Months FU (M3) mean (Sd)	Baseline (M1) mean (Sd)	Post-treatment (M2) mean (Sd)	3 Months FU (M3) mean (Sd)	*p*	*d*	*CI Interval*		*d*	*CI Interval*	
BSI	N	50	46	38	45	43	37							
	Psychological symptoms	1.50 (0.66)	1.22 (0.64)	1.08 (0.62)	1.68 (0.66)	1.64 (0.66)	1.41 (0.63)	.035	−0.65	−1.07	−0.22	−0.53	−0.98	−0.06
OQ-45	N	50	46	40	45	43	38							
	Psychological distress	88.4 (18.73)	74.57 (21.28)	70.5 (23.18)	93.76 (18.83)	87.89 (21.62)	81.04 (23.46)	.044	−0.62	−1.04	−0.19	−0.45	−0.90	−0.45

*BSI: brief symptom inventory; OQ-45: outcome questionnaire 45. Effect sizes concern the differences between the EMDR and wait-list at post-treatment and follow-up.

5.3. Pre-to-post treatment changes per group

EMDR participants reported significant pre-to-post treatment reductions in psychological symptoms, as indexed by the Brief Symptom Inventory (BSI), with medium effect sizes (EMDR: d = .42, CI; .01, .82; control group: d = .07, CI; −.35, .49) after 7.5 hours of EMDR. Likewise, significant pre-to-post treatment improvements in psychological distress as indexed by the Outcome Questionnaire (OQ) after EMDR therapy (EMDR: d = .69; CI; .27, 1.10; control group: d = .29), CI; −.13, .71) were found, with medium effect sizes. Global level of personality dysfunctioning was indexed using the General Assessment of Personality Disorder (GAPD) in a subsample (28 EMDR patients and 26 control group patients). The results on this outcome measurement were in line with the other outcomes (EMDR: d = .41; CI; −.14, .95; control group: d = −.10, CI; −.64, .46).

5.4. Changes at 3-month follow-up

At 3-month follow-up, after both groups followed 3 months of TAU, medium to large effect sizes were maintained regarding psychological symptoms (BSI; EMDR: d = .66, CI; .22, 1.08; control group: d = .41, CI; −.04, .84), psychological distress (OQ; EMDR: d = .86, CI; .42, 1.29; control group: d = .62, CI; .17, 1.05), and personality dysfunctioning (GAPD; EMDR: d = .50, CI; −0.09, 1.08; control group: d = .23, CI; .23, 0.79).

5.5. Differences between EMDR therapy and control group

Over the three measurement points, significant differences between the groups in psychological symptoms and psychological distress were found in favour of the EMDR group (see Table 2). Regarding personality dysfunctioning, Cohen's d effect sizes of EMDR versus the control group were −.68, 95% CI [−1.24, −.10] at post-treatment, and −.41, 95% CI [−1, .20] at follow up, with a significant difference between the groups in favour of the EMDR group (p = .007).

6. Discussion

The results of this study show that EMDR therapy yielded significant improvements with medium, intent-to-treat effect sizes for psychological symptoms, psychological distress, and personality functioning. These findings are particularly important because the treatment given was brief, whereas the gains were maintained at follow-up, following 3 months of treatment as usual (TAU).

As far as we are aware this is the first study evaluating the impact of treatment focused on

Table 3. Parameter estimates of the fixed effects of the LMM analysis.

	Fixed Effects BSI					Fixed Effects OQ-45				
	Est/Beta	SE	95% CI	t	*p*	Est/Beta	SE	95% CI	t	*p*
Intercept	1.50	0.09	1.32 – 1.68	16.73	<.001	88.37	2.65	83.11 – 93.63	33.36	<.001
Group	0.18	0.13	−0.08 – 0.44	1.37	.174	5.39	3.86	−2.27 – 13.05	1.40	.166
Post-treatment	−0.28	0.06	−0.41 – -0.16	−4.45	<.001	−13.80	2.22	−18.20 – 9.41	−6.21	<.001
Follow up	−0.42	0.09	−0.60 – -0.24	2.32	.053	17.87	3.26	11.42 – 24.32	5.48	<.001
Group * Post-treatment	0.24	0.09	0.06 – 0.42	2.60	.010	2.49	3.19	1.64 – 14.24	2.49	.014
Group * Follow up	0.15	0.13	−0.11 – 0.41	1.16	.248	5.15	4.67	−4.10 – 14.40	1.10	.272
			Model Fit					Model Fit		
AIC			389.63					2197.77		

*BSI: brief symptom inventory; OQ-45: outcome questionnaire 45.

memories of adverse events of patients with a PD without PTSD and the influence on TAU. A number of previous studies focused on the treatment of PTSD in patients with a PD as a comorbid disorder (e.g., Bovin et al., 2017; Harned 2013; Harned et al., 2014; Markowitz et al., 2015; Slotema et al., 2019) and found significant effects on symptoms of both PTSD and PD features. However, in these studies interventions pertained to traumatic (i.e. A criterion worthy) events underlying PTSD, while in the present study PTSD was excluded. In the present study target memories for EMDR therapy were selected based upon patients' current symptoms while the therapists identified keystone memories involving aetiological and/or aggravating adverse (childhood) events. Although different than previous approached the current findings are in line with other research findings and arguments (e.g. Markowitz et al., 2015) stemming from the notion that processing disturbing memories would not only have a positive effect on people's daily functioning, but also on symptom clusters (e.g. social withdrawal, avoidance, mistrust, low self-esteem) that are considered as specific for personality pathology.

The only other study that has applied EMDR therapy in the treatment of PD before was an uncontrolled open pilot study with patients who also suffered from PTSD (Slotema et al., 2019). Patients received treatment for their PD while in the same period EMDR therapy was applied in order to reduce typical trauma-related symptoms. This appeared beneficial in terms of a significant reduction of PTSD symptoms, but also of comorbid symptoms such as dissociation and insomnia. The median number of sessions of completers (the drop out was 32%) was four sessions of 60–90 minutes, but was applied as an addition to treatment as usual for personality disorders. In the present study the patients did not receive other forms of treatment before post-treatment measurement, length of treatment was brief in that patients received only 7.5 hours of EMDR therapy in total, and improved significantly. Between post-treatment and follow-up, patients received an average of five sessions TAU for PD within the 3 month before the follow up measurement. Overall, this is much shorter than in previous studies, including Markowitz et al. (2015) study who applied a treatment aimed at treating chronic PTSD that lasted 14 weeks, Bovin et al. (2017) who used 13 hours of therapist contact in total, and Harned et al. (2014) whose patients received one full year of dialectical behaviour therapy, existing of 1-h individual therapy, and two and a half hours group skills training per week later combined with the Dialectical Behaviour Therapy Prolonged Exposure Protocol.

The present study has several limitations that need to be noted. Firstly, one limitation is that the control group was a non-intervention waiting list group, which served as an untreated comparison for the experimental group. Clearly, in future studies, it would be more appropriate to add an active treatment control group. Our intention was to compare an active and established therapy with a waiting list control group as a comparator followed by treatment as usual, given that this was the first study ever conducted to examine the effect of EMDR therapy in patients with personality disorders without PTSD and this design made it possible to control for the effects of natural recovery, which is not possible with an active comparator alone. Secondly, due to the small number of each type of PD we were not able to determine differences between the PDs. Thirdly, we did not assess the loss of PD diagnoses post-treatment and only considered therapeutic gains during treatment for which we merely used proxy measures for the PDs. These do not accurately reflect the corresponding PD clusters, thus introducing some measurement bias. Therefore, future research should explore the long-term outcomes of these interventions. Fourthly, the follow-up measurement took place 3 months after treatment as usual (TAU) for the PDs started. This treatment included different interventions, such as those aimed at emotion regulation, schema-focused therapy or competitive memory training (COMET). Although this study was a good presentation of clinical practice and no significant differences in TAU or amount of sessions between the two groups were found, it may have caused an overestimation of the study treatment effects. A point of discussion pertains to the exclusion of individuals with PTSD. In the period the study was carried out, our mental health institution was in the transition of the DSM-IV-TR to

the DSM-5. Therefore, patients were classified as having PTSD during intake using a clinical interview for which we used the MINI Plus based upon DSM-IV-TR, rather than upon DSM-5, criteria. Although it could be argued that this is a potential limitation for interpreting the results, this probably has had little influence on the application of the exclusion criterion (i.e. absence of PTSD; see, for example Hoge, Riviere, Wilk, Herrell, & Weathers, 2014). Another limitation of the study is that randomization took place right before the baseline measurement, which could have influenced the baseline scores.

A few strengths of the study should also be mentioned. Firstly, the sample size of 97 patients and the fact that the study was carried out in three different outpatient clinics with patients suffering from severe psychopathology makes the study exemplar for clinical practice. Secondly, the treatment was well tolerated (only one participant, from the control group, needed to be hospitalized because of alcohol abuse, and the dropout rate was lower than in previous studies using trauma-focused psychotherapy, including those with a severe mental illness (about 30%; Kredlow et al., 2017; Slotema et al., 2019). Yet, the dropout rate of patients with a Cluster B personality disorder was significantly higher than those with other PDs. This is in accordance with earlier studies. Features such as interpersonal sensitivity, emotional lability, anger and impulsivity are believed to play a contributing role (Wnuk et al., 2013). Finally, we were able to constantly monitor treatment adherence during monthly supervision sessions for which every therapist in the study needed to show videos of their treatment sessions.

In conclusion, the results of this study show that a brief intensive treatment focused on memories of individuals' adverse events can be beneficial for those diagnosed with a PD to reduce psychological symptoms and to improve their functioning, suggesting that individuals with PDs can benefit from EMDR without any additional stabilizing interventions and no significant exacerbation of their symptoms. There is clearly a need for further well-designed trials of therapies for PDs that incorporate more treatment sessions and long-term outcome monitoring.

Disclosure statement

No potential conflict of interest was reported by the authors.

Conflict of interest

Dr. De Jongh reports personal fees from teaching activities, personal fees from books about trauma and its treatment (e.g., EMDR therapy), outside the submitted work; and has been a board member of the Dutch EMDR Association, and the EMDR Europe Association. Dr. Van der Palen, dr. Starrenburg and Hafkemeijer MSc have nothing to disclose.

Data availability statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data are not available.

Funding

This research was funded by GGZ Delfland psychiatric institute, which played no role in the design of the study, in the collection, analysis or interpretation of the data or in writing the manuscript.

ORCID

Laurian Hafkemeijer http://orcid.org/0000-0002-8645-9191
Ad de Jongh http://orcid.org/0000-0001-6031-9708
Job van der Palen http://orcid.org/0000-0003-1071-6769
Annemieke Starrenburg http://orcid.org/0000-0002-8312-7896

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