

Comparison of the 12-month efficacy of eye movement desensitization and reprocessing (EMDR) therapy and cognitive behavioral writing therapy (CBWT) in pediatric posttraumatic stress disorder following single-incident trauma

Secondary Analysis of data previously published:

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Methods:

Measures: (a) PTSD symptoms measured by the child and parent versions of the Revised Children's Responses to Trauma Inventory (CRTI; Alisic & Kleber, 2010); and (b) DSM-IV PTSD diagnostic status assessed by the Anxiety Disorders Interview Schedule, Child and Parent Version (ADIS-C/P; Silverman & Albano, 1996). ADIS-C/P interviews were conducted by seven clinical psychologists trained to use the ADIS-C/P to assess PTSD and who did not provide trial treatments. All interviews were audiotaped and 10% randomly selected, stratified by assessor and time of measurement, so that a selection of pretreatment ($n = 18$), posttreatment ($n = 12$), and follow-up interviews ($n = 22$) could be rerated by a psychologist with experience of carrying out ADIS-C/P interviews. Interrater reliability for PTSD diagnosis (including subthreshold) based on the ADIS-C/P was $\kappa = .822$ (child interview) and $\kappa = .634$ (parent interview). The Clinician Administered PTSD Scale – Child and Adolescent Version (CAPS-CA; Nader et al., 1996), a structured diagnostic interview often used in pediatric PTSD trials, had not been translated and validated in a Dutch version when this study began.

Statistical analysis: For this secondary analysis, included were only participants who fulfilled the criteria for PTSD according to DSM-IV in using the child-report of the Anxiety Disorders Interview Schedule for DSM-IV. After randomisation of the waiting list at posttreatment, $n = 29$ were allocated to the EMDR therapy and $n = 28$ to the CBWT.

Between-group comparisons on primary outcomes were carried out per the intention-to-treat principle using linear mixed models (LMM) including all randomized participants regardless of missing data. EMDR versus CBWT comparisons were for changes in outcome from pretreatment to 12-month follow-up. All models included fixed coefficients to account for baseline differences and differential change over time between arms, and a random intercept to capture individual baseline differences. Furthermore, we reported the percentage of children fulfilling the PTSD criteria according to ADIS-C and ADIS-P. We compared both conditions at each time point using Fisher-Freeman-Halton Exact comparisons. Additionally, PTSD diagnoses were computed according to ICD-10 depending on condition: T00 variables for the waitlist group and T0 variables for the EMDR and CBWT groups. Since ADIS was created for DSM-IV, a proxy ICD-10 diagnosis was calculated following the method suggested by Cedric Sachser and Lutz Goldbeck (2016).

Table 1 Means and standard deviations for child and parent-reported PTSD symptoms at pre, posttreatment and follow-up (intent-to-treat) by condition and between condition comparisons

Variable	Condition								LMM Intention-to-Treat				EMDR vs CBWT	
	EMDR				CBWT				Mean difference (EMDR-CBWT) (p)					
	Pre <i>M</i> (SD)	Post <i>M</i> (SD)	3 months <i>M</i> (SD)	12 months <i>M</i> (SD)	Pre <i>M</i> (SD)	Post <i>M</i> (SD)	3 months <i>M</i> (SD)	12 months <i>M</i> (SD)	Pre	Post	3 months	12 months	<i>t</i>	<i>p</i>
CRTI Child														
Total Score	92.17 (3.71)	55.55 (3.77)	56.14 (3.80)	48.90 (3.83)	94.18 (3.86)	63.46 (3.87)	59.85 (3.87)	58.23 (3.94)	-2.02 (.717)	-7.91 (.147)	-3.71 (.496)	-9.33 (.092)	1.89	.07
Intrusion	2.16 (.20)	.36 (.20)	.42 (.20)	.29 (.20)	2.24 (.21)	.55 (.21)	.52 (.21)	.55 (.21)	-.08 (.781)	-.20 (.495)	-.10 (.734)	-.26 (.365)	0.43	.67
Avoidance	3.19 (.27)	1.10 (.27)	1.19 (.27)	.77 (.27)	2.89 (.28)	1.00 (.28)	.86 (.28)	1.24 (.28)	.29 (.451)	.10 (.806)	.33 (.401)	-.47 (.237)	1.59	.12
Arousal	2.16 (.21)	.68 (.21)	.62 (.21)	.32 (.21)	2.66 (.22)	1.21 (.22)	1.00 (.22)	.90 (.22)	-.49 (.101)	-.53 (.079)	-.39 (.198)	-.57 (.057)	.19	.85
CRTI Parent														
Total Score	90.22 (4.39)	64.86 (4.53)	64.46 (4.52)	50.59 (4.57)	93.23 (4.39)	64.90 (4.43)	64.85 (4.43)	65.21 (4.51)	-3.01 (.629)	-.04 (.995)	-.39 (.951)	-14.63 (.025)	2.03	.047
Intrusion	1.97 (.22)	.48 (.22)	.68 (.22)	.42 (.22)	2.21 (.23)	.66 (.23)	.55 (.23)	.66 (.23)	-.24 (.447)	-.17 (.586)	.13 (.689)	-.24 (.453)	-.01	.99
Avoidance	2.77 (.31)	1.29 (.31)	1.36 (.31)	1.10 (.31)	3.21 (.32)	1.41 (.32)	1.10 (.32)	1.45 (.32)	-.43 (.328)	-.12 (.780)	.25 (.569)	-.38 (.386)	-.11	.91
Arousal	1.94 (.23)	.94 (.23)	.97 (.23)	.39 (.23)	2.55 (.24)	.66 (.24)	.90 (.24)	1.00 (.24)	-.62 (.065)	.28 (.399)	.07 (.830)	-.61 (.066)	-.01	.99

Note. CRTI = Children's Responses to Trauma Inventory, EMDR = Eye Movement Desensitization and Reprocessing; CBWT = cognitive behavioral writing therapy; LMM = Linear Mixed Model

Table 2 Proportion of participants no longer meeting DSM-IV PTSD criteria at posttreatment and follow up

	Pretreatment		Posttreatment		3-Month Follow-up		12-Month Follow-up	
	EMDR	CBWT	EMDR	CBWT	EMDR	CBWT	EMDR	CBWT
ADIS-Child	<i>n</i> = 31	<i>n</i> = 29	<i>n</i> = 29	<i>n</i> = 28	<i>n</i> = 28	<i>n</i> = 27	<i>n</i> = 27	<i>n</i> = 26
% No PTSD (<i>n</i>)	0.0 (0)	0.0 (0)	89.7 (26)	82.1 (23)	92.9 (26)	81.5 (22)	100.0 (27)	84.6 (22)
% PTSD (<i>n</i>)	100.0 (31)	100.0 (29)	10.3 (3)	17.9 (5)	7.1 (2)	18.5 (5)	0.0 (0)	15.4 (4)
ADIS-Parent	<i>n</i> = 28	<i>n</i> = 29	<i>n</i> = 28	<i>n</i> = 28	<i>n</i> = 26	<i>n</i> = 27	<i>n</i> = 25	<i>n</i> = 24
% No PTSD (<i>n</i>)	25.0 (7)	37.9 (11)	89.3 (25)	75.0 (21)	84.6 (22)	85.2 (23)	100.0 (25)	83.3 (20)
% PTSD (<i>n</i>)	75.0 (21)	62.1 (18)	10.7 (3)	25.0 (7)	15.4 (4)	14.8 (4)	0.0 (0)	16.7 (4)

Note. ADIS = Anxiety Disorders Interview Schedule for DSM-IV; EMDR = eye movement desensitization and reprocessing; CBWT = cognitive behavioral writing therapy. Fisher-Freeman-Halton Exact comparisons for EMDR versus CWPT at each time point, $\chi^2 = 4.53$, $p = .05$ for EMDR versus CBWT at 12-month Follow up (ADIS-P and ADIS-C)

Table 3 Percentage of PTSD diagnoses according to ICD-10 at baseline

Condition baseline	ICD-10 PTSD diagnosis				Total
	No PTSD		PTSD		
	<i>n</i>	%	<i>n</i>	%	<i>N</i>
EMDR	6	14%	37	86.0%	43
CBWT	4	9.5%	38	90.5%	42
Waiting list	2	11.1%	16	88.9%	18
Total	12	11.7%	91	88.3%	103

Table 4: Percentage of PTSD diagnoses according to ICD-10 after allocation of the wait list to EMDR or CBWT:

	Pretreatment		Posttreatment		3-Month Follow-up		12-Month Follow-up	
	EMDR	CBWT	EMDR	CBWT	EMDR	CBWT	EMDR	CBWT
ADIS-Child	<i>n</i> = 56	<i>n</i> = 47	<i>n</i> = 56	<i>n</i> = 47	<i>n</i> = 56	<i>n</i> = 47	<i>n</i> = 27	<i>n</i> = 26
% No PTSD (<i>n</i>)	9 (16.1%)	5 (10.6%)	49 (87.5%)	39 (83.0%)	49 (87.5%)	40 (85.1%)	49 (87.5%)	42 (89.4%)
% PTSD (<i>n</i>)	47 (83.9%)	42 (89.4%)	7 (12.5%)	15 (17%)	7 (12.5%)	7 (12.5%)	7 (12.5%)	5 (10.6%)

Note. Displayed are *n* (%)

Results:

Linear mixed model analyses conducted under the intention-to-treat principle showed that both EMDR and cognitive behavioral writing therapy (CBWT) were associated with substantial reductions in PTSD symptoms from pretreatment to posttreatment, which were maintained at 3- and 12-month follow-up.

On child-reported PTSD symptoms (CRTI), both treatment conditions demonstrated marked decreases across total scores and symptom clusters (intrusion, avoidance, and arousal), with no statistically significant between-group differences at any assessment point.

For parent-reported PTSD symptoms, both treatments again resulted in significant symptom reductions over time. However, at the 12-month follow-up, children receiving EMDR showed significantly lower total PTSD symptom severity (parent-reported) than those in the CBWT condition. The interaction between time (baseline vs. 12-month follow up) and condition was significant, indicating that EMDR achieved greater long-term symptom reduction than CBWT, although the effect size was small.

Diagnostic outcomes based on the ADIS-C/P indicated high rates of remission in both conditions. According to child interviews, 89.7% of participants in the EMDR group and 82.1% in the CBWT group no longer met DSM-IV criteria for PTSD at posttreatment. These remission rates remained high at follow-up, with 100% of children in the EMDR group and 84.6% in the CBWT group no longer meeting PTSD criteria at 12 months.

Conclusion:

Both EMDR and CBWT were highly effective treatments for children and adolescents with PTSD, leading to substantial and sustained reductions in symptom severity and high rates of diagnostic remission. Overall treatment outcomes were comparable across most symptom measures. These findings suggest that both interventions are viable evidence-based treatment options for pediatric PTSD.

Limitations:

Several limitations should be considered when interpreting the findings. First, the relatively small sample size limited the statistical power to detect small effects. Second, the 100% remission rate observed in the EMDR group may indicate a potential statistical ceiling effect. Third, the interrater reliability for parent interviews was only moderate ($\kappa = .634$). Finally, the possibility of attrition bias cannot be excluded; if non-responders were more likely to drop out, this could have introduced selection bias and potentially inflated the observed treatment effects.

Source: Sachser, C., & Goldbeck, L. (2016). Consequences of the diagnostic criteria proposed for the ICD-11 on the prevalence of PTSD in children and adolescents. *Journal of Traumatic stress, 29*(2), 120-123.