

RESEARCH ARTICLE

Treating complicated grief and posttraumatic stress in homicidally bereaved individuals: A randomized controlled trial

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Homicidally bereaved individuals may experience symptoms of Complicated Grief (CG) and Posttraumatic Stress Disorder (PTSD). This Randomized Controlled Trial examined the effectiveness of an 8-session treatment encompassing Cognitive Behavioural Therapy (CBT) and Eye Movement Desensitization and Reprocessing (EMDR) to reduce self-rated CG and PTSD symptoms in 85 Dutch adult homicidally bereaved men and women. We compared changes in symptoms of CG (assessed using the Inventory of Complicated Grief) and PTSD (assessed using the Impact of Event Scale) between an intervention group and a waitlist control group. The treatment was effective in reducing CG and PTSD symptoms, from pretreatment to posttreatment. It can be concluded that EMDR and CBT seem promising treatments for homicidally bereaved individuals for both men and women, and regardless of the time since the loss. Further research is needed to examine whether a combined treatment of EMDR and CBT together is of added value in situations where grief and trauma are intertwined over offering only one of the two treatment modalities.

KEYWORDS

bereavement, cognitive behavioural therapy, eye movement desensitization and reprocessing, homicide, loss

1 | INTRODUCTION

People who lost a loved one due to homicide experience grief but are also confronted with the traumatic nature of the death; the body of their loved one is violated and they are (unwillingly) confronted with the police search for the perpetrator, lawsuits, juridical procedures, and media attention. In general, a minority of 10% to 15% of bereaved individuals suffer from chronic grief symptoms the first year following the loss (Mancini & Bonanno, 2006). The risk of mental health problems increases when the loss was violent, such as due to homicide (Kristensen, Weisæth, & Heir, 2012). These may include symptoms of Complicated Grief (CG; also known as *Prolonged Grief Disorder* or *Persistent Complex Bereavement Disorder*; American Psychiatric Association, 2013) and posttraumatic stress disorder (PTSD; Rynearson & Geoffrey, 1999; Van Denderen, de Keijser, Huisman, & Boelen, 2014). Studies found higher levels of Prolonged Grief Disorder, PTSD, and depression among persons bereaved by violent loss (accident, suicide, or homicide) than people bereaved by non-violent loss. Following violent loss, people also experience more avoidance, negative cognitions, and a sense of unrealness when compared with non-violent loss

(Boelen, de Keijser, & Smid, 2015). Murphy, Johnson, Wu, Fan, and Lohan (2003) found higher PTSD rates among bereaved individuals following homicide when compared with suicide. CG is characterized by intense yearning, searching, and disbelief about the death, causing considerable impairments in social, occupational, and work related functioning (Prigerson et al., 1995; Prigerson et al., 1995). CG shares some symptoms with PTSD, such as re-experiencing and avoidance. However, it also exhibits distinctive symptoms such as anxiety (central to PTSD) and separation distress and yearning (central to CG; Boelen, Van den Hout, & Van den Bout, 2006; Dillen, Fontaine, & Verhofstadt-Denève, 2009; Prigerson, Frank, et al., 1995; Shear, Frank, Houck, & Reynolds II, 2005). In a sample of 312 homicidally bereaved individuals, self-reported prevalence of PTSD symptoms was found to be 34%. Prevalence of CG symptoms was found to be 82% (Van Denderen, de Keijser, Huisman, et al., 2014).

Different studies report effects of interventions for homicidally bereaved individuals with elevated symptoms of psychopathology, such as holistic retreat sessions (Tuck, Baliko, Schubert, & Anderson, 2012), grief treatment programs (Asukai, Tsuruta, & Saito, 2011), and restorative retelling (Saindon et al., 2014). Rynearson (1994) provided

group psychotherapy, which focused on dysfunctional affects following homicidal loss and (re)building resilient coping responses. These studies have several methodological limitations, such as small sample size, and lack of control groups. A treatment found to be effective in reducing bereavement-related distress symptoms after different types of loss is Cognitive Behavioural Therapy (CBT; Boelen, De Keijser, Van den Hout, & Van den Bout, 2011; Bryant et al., 2014; Rosner, Pfoh, Kotoučová, & Hagl, 2014; Wagner, Knaevelsrud, & Maercker, 2006). The fruitfulness of CBT for bereaved individuals can be understood from the perspective of a cognitive behavioural model for CG (Boelen, van den Hout, & van den Bout, 2006). According to this model, three processes are crucial in the development and maintenance of CG. First, CG is associated with poor integration of the loss in the autobiographical memory. As a consequence, thoughts, feelings, and recollections linked with the loss are easily triggered and the loss continues to feel unreal. Second, people with CG are assumed to have global negative cognitions and to assign catastrophic meanings to their own grief reactions. People with negative cognitions as “the future is worthless” may be more inclined to avoid social activities, going to work, and setting new goals that could challenge negative thoughts and foster healthy functioning. This relates to the third process, namely, that bereaved with CG are inclined to avoid people, feelings, or situations reminding them of their loss (Boelen et al., 2006). Both negative cognitions and avoidance behaviour have been found to be significantly associated with the severity of symptoms of CG and PTSD following homicidal loss (Boelen, van Denderen, & de Keijser, 2016). Although the effectiveness of CBT for bereaved individuals has been shown in several studies, the effect of CBT in people bereaved by homicidal loss is largely unclear.

Apart from CBT, Eye Movement Desensitization and Reprocessing (EMDR) has been found to be effective in the treatment of emotional distress after different types of trauma (Bisson & Andrew, 2007). EMDR is also suggested to be effective in situations in which trauma and loss are intertwined (Solomon & Rando, 2007; Solomon & Shapiro, 1997). In such situations, there may be obstacles that can interfere with recovery and adjustment, such as memories related to the traumatic death cause, feelings of responsibility for the event, and negative assumptions associated with control, and vulnerability and safety (Solomon & Shapiro, 1997). EMDR is hypothesized to be helpful in alleviating CG symptoms by reducing the vividness and emotionality of distressing loss-related thoughts, feelings, and memories. Thereby, the elaboration and integration of the loss with autobiographical knowledge is facilitated. The efficacy of EMDR in the treatment of CG has only been demonstrated in case examples (Solomon & Rando, 2007) and in an uncontrolled study among 50 bereaved individuals following loss due to a motor vehicle accident, disaster, homicide, or a drunk-driving fatality (Sprang, 2001). In that latter study, participants undergoing EMDR reported significant reductions in CG symptoms from pretest to 9 month follow-up.

To examine the effectiveness of CBT and EMDR in reducing CG and PTSD following homicidal loss, we performed a randomized controlled trial, evaluating a brief 8-session treatment encompassing CBT and EMDR among Dutch homicidally bereaved individuals. The aim was to reduce self-rated CG and PTSD symptoms. Because of the comorbidity of CG and PTSD in homicidally bereaved individuals

Key Practitioner Message

- Homicidally bereaved individuals with elevated levels of CG and PTSD might benefit from an 8-session treatment with EMDR and CBT.
- When clinicians meet bereaved individuals with CG symptoms that seek treatment, they should be aware of possible elevated PTSD, because this pattern of comorbidity is relatively common following homicidal loss.
- Psycho-education about the persistent nature of CG symptoms seems advised in order to give homicidally bereaved individuals a realistic impression about the bereavement related symptoms they may experience after completing therapy.

(Raphael, Jacobs, & Looi, 2013; Shear et al., 2005; Van Denderen, de Keijser, Huisman, et al., 2014), a combination of CBT and EMDR may have added value above and beyond offering one of the two treatment modalities. We also examined whether the order of the two treatment modalities is of particular importance, because some authors suggest that it is difficult for bereaved individuals to accommodate to the loss until they have adjusted to the traumatic responses associated with the loss (Lindy, Green, Grace, & Titchener, 1983; Rynearson & Geoffrey, 1999; Rynearson & McCreery, 1993; but see Djelantik, Smid, Kleber, & Boelen, 2018). This seems to imply that PTSD symptoms must be reduced first, before treating grief symptoms. Four treatment conditions were compared: two Intervention Conditions (IC), with (a) EMDR followed by CBT and (b) CBT followed by EMDR, and two Waitlist Conditions (WC) in which people underwent a waiting period of 4 months, after which they received (c) EMDR followed by CBT or (d) CBT followed by EMDR. The study design is depicted in Figure 1.

1.1 | Hypotheses

The first expectation is that the treatment is effective in reducing CG and PTSD symptoms such that participants in the IC at posttreatment will report significant lower self-rated CG and PTSD scores when compared with participants in the WC at the second pretreatment measure (Hypothesis 1). We examined the effect of several possible moderators of treatment effects, namely, gender, recruitment strategy, and time since loss. In different meta-analyses, it was found that individuals who seek voluntarily treatment benefitted more than individuals who were recruited by outreach such as phone call or letter mailing (Allumbaugh & Hoyt, 1999; Currier, Neimeyer, & Berman, 2008). Accordingly, we expect participants included through self-referral to benefit more from the therapy than participants who were approached by the researchers (Hypothesis 2). Because of mixed results with regard to sex and time since loss as a predictor of effect sizes (ES; Allumbaugh & Hoyt, 1999; Currier et al., 2008), we had no a priori expectations regarding these variables. To gain insight in the long-term effects of the treatment, we also looked at the changes in CG and PTSD symptoms from posttreatment to a 6 month follow-up.

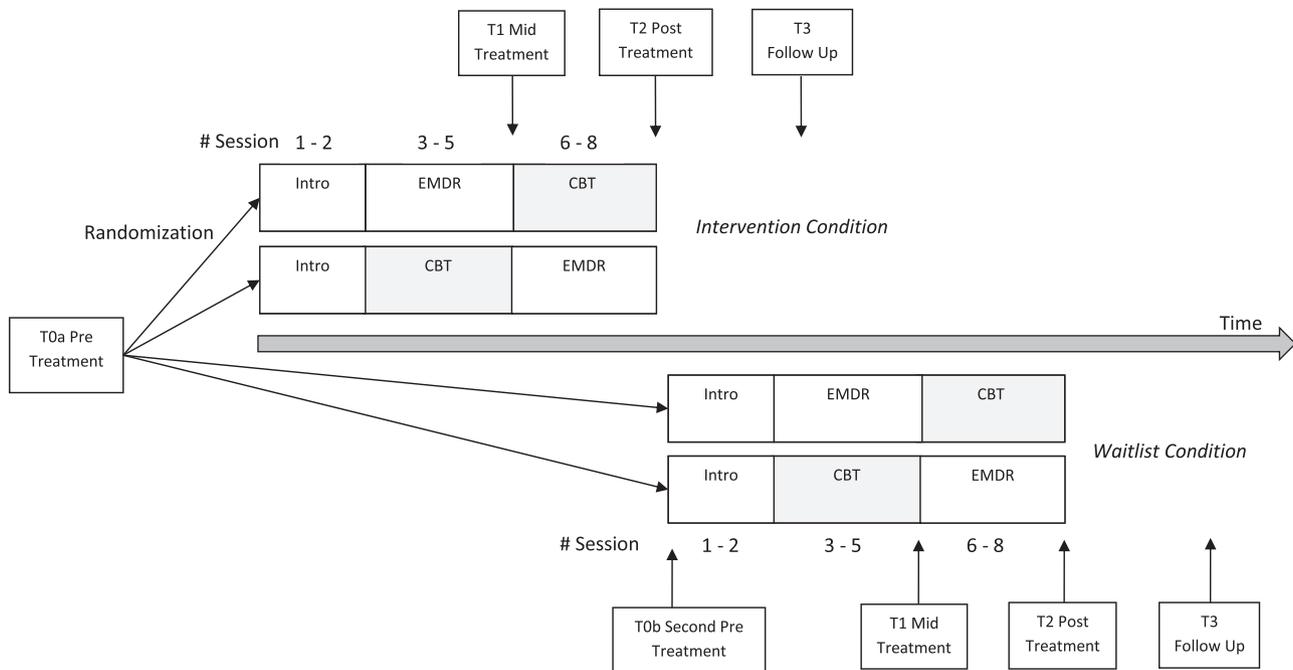


FIGURE 1 Study design. EMDR = eye movement desensitization and reprocessing; CBT = cognitive behavioural therapy

Regarding the effectiveness of EMDR and CBT *separately*, we hypothesize that participants at midtreatment, after completing only one type of treatment modality, will report significant lower CG and PTSD scores than at pretreatment (Hypothesis 3). With regard to the effectiveness of the treatment *order* (EMDR followed by CBT or CBT followed by EMDR), we hypothesize that participants who received EMDR followed by CBT show a stronger decline in self-rated CG and PTSD from pretreatment to posttreatment than participants who received CBT followed by EMDR (Hypothesis 4). Hypotheses 1 and 2 are related to primary research aims, Hypotheses 3 and 4 are related to our secondary research aims.

2 | METHOD

2.1 | Participants

The data presented in this paper were collected in the context of a research program on psychopathology among close relatives of homicide victims in the Netherlands (Van Denderen, de Keijser, Gerlsma, Huisman, & Boelen, 2014; Van Denderen, de Keijser, Huisman, et al., 2014). Participants were invited to take part in a questionnaire survey and, subsequently, were offered the possibility to undergo treatment in the context of a treatment study if meeting the inclusion criteria. To be included in the treatment study, participants had to score above the cut-off score of the Dutch Inventory of Complicated Grief (ICG; >39; Boelen, de Keijser, & van den Bout, 2001; cf. Prigerson, Maciejewski, et al., 1995), the Impact of Event Scale (IES; ≥ 26 ; Horowitz, Wilner, & Alvarez, 1979), or both. Included participants were adult ≥ 18 years old; (adoptive or in-law) family members, spouses, and friends of homicide victims; who understood the Dutch language; and had lost someone to homicide minimally 6 months ago. Inclusion ran from June 2012 to June 2014. Participants were excluded if they

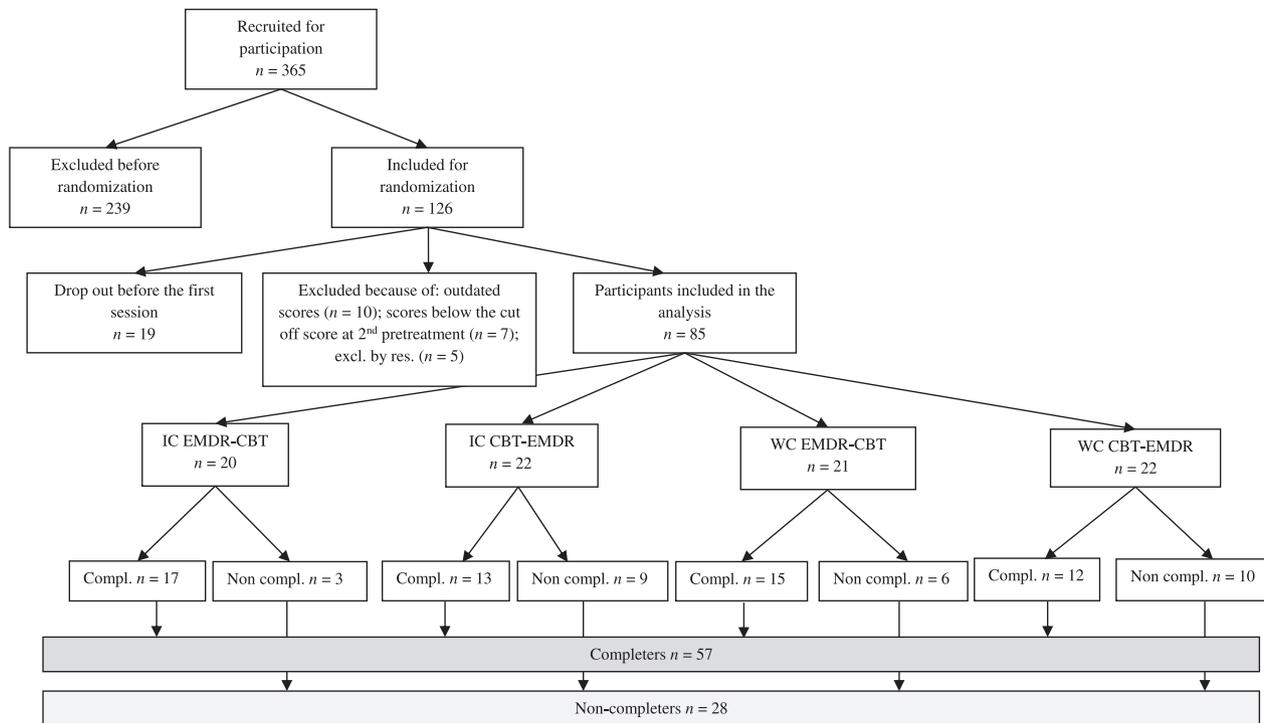
(a) had lost someone through killing without intent (e.g., caused by a drunken driver); (b) had lost someone through killing in the context of collective violence, such as war; (c) were themselves convicted for the homicide, or (d) had psychological problems that interfered with their participation in the therapy.

2.2 | Procedure

In total, 365 individuals completed the questionnaires for the survey and were screened for eligibility for the treatment study. Participants were recruited from three resources: (a) via three support organizations for homicidally bereaved individuals and victims of violence, (b) via the Dutch governmental organization *Victim Support*, and (c) via a website created by the authors, containing information about coping with homicidal loss (self-referral; for more details, see Van Denderen, de Keijser, Huisman, et al., 2014).

As can be seen in Figure 2, 126 of the 365 individuals scored above the cut-off score of the ICG and/or the IES, responded positively to the treatment offer, and were included randomly allocated to the conditions.

Of the 126 participants included for randomization, 19 individuals dropped out before the first session, due to life events not related to the treatment or because they were already in therapy by a therapist not related to our study. Due to unforeseen circumstances, some participants could start the therapy not directly after randomization. For the recency of the pretreatment scores on measures tapping the primary outcome variables, we therefore applied the following rule: if the time between pretreatment scores and the start of the treatment was longer than 8 weeks, we regarded the scores obtained from the survey as no longer topical.¹ In those cases, participants were sent the ICG and IES again. This was the case for 49 participants. As can be seen in the category *Excluded because of* in the flowchart, ten participants were excluded because of outdated scores (i.e., the time



Note. IC = Intervention Condition; WC = Waitlist Condition; E-C = EMDR – CBT; C-E; CBT – EMDR; EMDR = Eye Movement Desensitization and Reprocessing; CBT = Cognitive Behavioral Therapy; Excl. by res. = participant is excluded by the researchers because the treatment order was not correctly applied by the therapist. Compl. = Completers; Non-compl. = Non completers.

FIGURE 2 Flowchart of study recruitment

between this next measurement and start of the treatment was again longer than 8 weeks); seven participants were excluded because they no longer scored above the cut-off score of the ICG or IES, and five because the order of the treatment was not correctly followed by the therapist.

The analyses were conducted with 85 participants; 57 completed the treatment and 28 dropped out between Sessions 1 and 8. Reasons for dropout were losing motivation, the treatment did not meet expectations of the client, and individuals were busy with life events not related to the treatment.

2.3 | Study design and treatment conditions

All four conditions (IC EMDR + CBT; IC CBT + EMDR; WC EMDR + CBT; WC CBT + EMDR) started with two introductory sessions with the same content (see Section 2.6 for the content of these two sessions). Then participants received three sessions of EMDR followed by three sessions of CBT or vice versa. The CBT sessions lasted 45 min, EMDR sessions lasted between 45 and (maximally) 90 min. Participants in the IC started the treatment immediately; participants in the WC started treatment after a waiting period of 4 months. Participants in both conditions were allowed to undergo other kinds of therapy or use medication. The study design is depicted in Figure 1.

For participants in the IC, data were collected at four measurement occasions: pretreatment, midtreatment (before changing to the other type of treatment modality), posttreatment, and at 6 months follow-up. For participants in the WC, data were collected at five measurement occasions; the four described above and a second

pretreatment measure, after a waiting period of 4 months (see Figure 1).

2.4 | Sample characteristics

Participants included in the analyses ($n = 85$) ranged in age from 18 to 80 ($SD = 14.9$) years; 74% were woman, 39% were parents of the victim (see Table 1). Time since the loss ranged from 0.5 to 20 years ($M = 4.0$ years, $SD = 4.7$). As noted above, participants were included if they scored above the cut-off score of the ICG ($n = 80$, 94.1%), the IES ($n = 80$, 94.1%), or both ($n = 75$, 88.2%).

2.5 | Assignment

Participants were randomly assigned to one of four conditions. Participants who were part of one family were allocated to the same condition. Randomization was performed by an independent researcher with use of Statistical Package For Social Sciences, and was conducted after obtaining written informed consent from the participant.

2.6 | Treatment

Treatment was conducted individually for all participants. The introductory sessions consisted of psycho-education about homicidal loss (Session 1) and a discussion about grief and social support in the social network of the participant (Session 2). In this session, a family member of the participant was invited. For the EMDR sessions, therapists used a standard Dutch EMDR treatment protocol (De Jongh & Ten Broeke, 2003). EMDR was performed by means of alternating eye movements. In the CBT module, the therapist explained the rationale of CBT to the

TABLE 1 Demographic characteristics of the sample, described by treatment condition

Characteristics	All participants (n = 85) Mean (SD)	IC		WC	
		EMDR-CBT (n = 20) Mean (SD)	CBT-EMDR (n = 22) Mean (SD)	EMDR-CBT (n = 21) Mean (SD)	CBT-EMDR (n = 22) Mean (SD)
Time since loss (years)	4.22 (4.71)	3.78 (5.53)	4.19 (3.98)	4.43 (5.25)	4.41 (4.46)
Age participant (years)	48.5 (14.92)	50.05 (14.86)	43.82 (16.04)	51.05 (12.77)	49.41 (15.93)
Age victim (years)	41.68 (21.02)	49.06 (23.10)	45.95 (20.37)	39.86 (22.17)	33.32 (16.83)
<i>n</i> (%)					
Sex participant: Women	63 (74)	12 (60)	19 (86.4)	15 (71.4)	17 (77.3)
Sex victim: Women	33 (39.30)	9 (45)	8 (36.4)	11 (52.4)	5 (22.7)
Participant is ... from the victim:					
Spouse	15 (17.9)	5 (25)	6 (27.3)	2 (9.5)	2 (9.1)
Parent	33 (39.3)	4 (20)	5 (22.7)	11 (52.4)	13 (59.1)
Child	18 (21.4)	7 (35)	4 (18.2)	4 (19)	3 (13.6)
Sibling	11 (13.1)	3 (15)	5 (22.7)	3 (14.3)	-
Non-immediate family member	4 (4.8)	-	2 (9.1)	1 (4.8)	1 (4.5)
Other (friend, acquaintance)	2 (2.4)	-	-	-	2 (9.1)
Symptoms					
CG symptoms	80 (94.1)	19 (95)	20 (90.9)	20 (95.2)	21 (95.5)
PTSD symptoms	80 (94.1)	20 (100)	19 (86.4)	20 (95.2)	21 (95.5)
Both CG and PTSD	75 (88.2)	19 (95)	17 (77.3)	19 (90.5)	20 (90.9)
Recruited by					
Victim help	42 (49.4)	14 (70)	9 (40.9)	12 (57.1)	7 (31.8)
Support groups	24 (28.2)	4 (20)	3 (13.6)	6 (28.6)	11 (50)
Media (self-referral)	19 (22.4)	2 (10)	10 (45.5)	3 (14.3)	4 (18.2)

Note. Data are expressed as numbers (%) or as means (SD). Numbers and percentages do not always count up to the total *n* or 100 due to missing values and rounded figures. IC = Intervention Condition; WC = Waitlist Condition; EMDR = Eye Movement Desensitization and Reprocessing; CBT = Cognitive Behavioural Therapy; CG = Complicated Grief; PTSD = Posttraumatic Stress Disorder.

participant. The sessions were aimed at identifying, challenging, and changing negative cognitions related to the loss (Boelen, De Keijser, Van den Hout, & Van den Bout, 2007). Behavioural experiments and cognitive restructuring were used to challenge the sustainability and usability of nonadaptive thoughts and to formulate more positive and adaptive thoughts.

The treatment was carried out by 26 licensed mental health psychologists and psychotherapists who were trained by the second and last author (both licensed cognitive behavioural psychotherapists and licensed supervisors) in CBT and EMDR. Therapists followed a strict treatment protocol. If desired, therapists could discuss questions regarding the treatment with these two authors. Fidelity to the treatment protocol was examined by the first author, by checking the log-book of the therapists, in which duration, order, and content of sessions was reported. This was supervised by the second and last author. This procedure led, as noted before, to the removal of five participants from further analyses, who underwent more EMDR sessions than the treatment protocol allowed.

2.7 | Ethics statement

The study was approved by the Ethical Commission Psychology, the local institutional review board of the University of Groningen. All participants provided handwritten or typewritten informed consent before starting the treatment.

2.8 | Measures

2.8.1 | Demographic and homicide-related information

Participants received a self-constructed questionnaire with sociodemographic questions.

2.8.2 | Inventory of complicated grief (ICG)

The 29-item ICG is a measure of CG (Prigerson, Maciejewski, et al., 1995; Dutch version: Boelen, Van den Bout, De Keijser, & Hoijtink, 2003). Items are rated on 5-point scales ranging from *never* to *always*. Examples of items are "I feel that a part of me died along with the deceased" and "I have felt on edge, jumpy, or easily startled since the death." Scores can range between 0 and 116. Based on scores of a Dutch reference group, a score higher than 39 was used as a cut-off for the presence of clinical levels of CG (Boelen et al., 2001). Cronbach's alpha was .92, based on data completed at pretreatment.

2.8.3 | Impact of event scale (IES)

The Dutch version of the IES measured symptoms of PTSD (Horowitz et al., 1979; Dutch version: Brom & Kleber, 1985). The IES is an internationally widely used instrument to assess symptoms of PTSD, and consists of 15 items rated on a 4-point scales ranging from *not at all* to *extremely*. The items measure two dimensions of psychological reactions following adverse events: intrusions and avoidance. Participants completed the items based on their thoughts and feelings regarding

the last 7 days. Scores range between 0 and 75. Based on Horowitz et al. (1979), a score of 26 or higher indicated clinically significant post-traumatic stress. Items include "I felt as if it hadn't happened or wasn't real" and "I tried to remove it from my memory." Cronbach's alpha (based on the pretreatment measure) was .83. Because diagnostic interviews were not used to assess symptoms, we refer to the examined bereavement-related symptoms with "Complicated Grief" and the whole of trauma-related symptoms "PTSD" without referring to CG and PTSD as syndromes.

2.9 | Potential moderator variables

Potential moderator variables examined were treatment order (EMDR followed by CBT vs. CBT followed by EMDR), participant's gender, recruitment strategy (i.e., recruited from support organizations, Victim Help, or via the internet), and time since loss in years.

2.10 | Statistical analyses

Analyses were conducted using Statistical Package For Social Sciences and *Statistical Analysis System*. Analyses in both programs gave similar results. Following previous research (Van Denderen, de Keijser, Gerlisma, et al., 2014; Van Denderen, de Keijser, Huisman, et al., 2014), scale scores were calculated for participants who answered more than 50% of the items. When the scale score was computed, the missing item responses were replaced by average scores on the observed items. Participants who completed less than 50% of the items of a scale were excluded.

Eight participants continued therapy after the eight sessions of the treatment. Those eight participants were excluded from the follow-up analysis. Because observations were correlated (the 85 participants who started the treatment were nested within 73 homicide victims), a three level multilevel analysis was conducted, in which time (Level 1) is nested in participants (Level 2) and participants are nested in victims (Level 3).² Time (pretreatment, midtreatment, posttreatment, and follow-up) was used as a within-participant variable. Treatment *condition* (IC or WC), treatment *order* (EMDR followed by CBT or CBT followed by EMDR), participants' gender, recruitment strategy, and time since loss were used as between-participant variables.

The analyses were conducted at the intention-to-treat sample, defined as completers and non-completers (see also the flowchart of study recruitment depicted in Figure 2). Missing items of non-completers were not imputed. For example, if scores of a non-completing participant were completely missing at posttreatment and follow-up, his/her scores were only included at pretreatment and midtreatment. Analyses were also conducted at the completers sample. The results of the completers sample are only reported in the text if they differ from the intention to treat group. In case of similar results, a footnote is added that states that no differences are found.

2.10.1 | Preliminary analysis

Before testing the hypotheses, we examined whether participants in the IC or WC differed from each other at pretreatment (see Figure 1; T0a) with regard to ICG and IES scores, time since loss (using independent *t* tests), gender, kinship, and recruitment strategy (using

Chi-square tests). Additionally, we also examined whether participants treated with EMDR followed by CBT differed at pretreatment (Figure 1; T0a) on ICG and IES scores, time since loss, gender, kinship, and recruitment strategy from participants treated with CBT followed by EMDR (based on participants in the IC and WC together). This was performed because differences at pretreatment on these variables could possibly influence the results of the outcomes conducted to test the second and third hypothesis. If we would find differences between the groups on these variables, then we planned to add these variables as covariates in all analyses concerning these hypotheses.

2.10.2 | Hypothesis testing

To test Hypothesis 1, we first compared pretreatment with second pretreatment ICG and IES scores of participants in the WC on the one hand (Figure 1; T0a and T0b), with pretreatment to posttreatment ICG and IES scores of participants in the IC on the other hand (Figure 1; T0a and T2). We calculated main effects of Time, Condition (IC or WC), and a Time \times Condition interaction effect on changes in ICG and IES scores. To test Hypotheses 2, 3, and 4, participants in the IC and WC were combined after participants in the WC had also completed the treatment.³ To test Hypothesis 2, we calculated main effects of Recruitment strategy, Gender, and two way interactions (e.g., Time \times Recruitment strategy, Time \times Gender) on changes in symptoms of CG and PTSD from pretreatment to posttreatment (Figure 1; T0 and T2, using data from all participants, included in both the IC and WC). To examine whether the treatment effect differed according to time since loss, we calculated gain scores for the ICG and the IES (pretreatment minus posttreatment; Figure 1; T0 and T2), such that higher gain scores represented greater improvement (using data from all participants, included in both the IC and WC). We conducted a regression analysis with ICG and IES gain scores as dependent variables and time since loss as independent variable. For exploratory reasons, we also looked at the changes in CG and PTSD symptoms from posttreatment to 6 month follow-up using paired *t* tests (Figure 1; T2 and T3). Additionally, we tested whether the proportion participants who scored above the cut-off score at posttreatment differed significantly from the proportion participants who scored above the cut-off score at follow-up, using the McNemar Test (Sheskin, 2004). Following recommendations of Jacobson and Truax (1991), we tested whether changes in symptom levels were clinically significant, using data from the participants who completed treatment. Participants were considered clinically significantly improved if their posttreatment ICG and IES scores were more than two standard deviations below the mean of the pretreatment sample (see Section 3 for the exact means that were used). We also used a more liberal method, by calculating the percentage of participants who scored under the cut-off scores of the ICG and IES at posttreatment. Cohen's *d* statistics were used to calculate ES, using pooled standard deviations. An effect size of .50 is considered small, between .50 and .80 moderate, >.80 large, and >1.30 very large (Cohen, 1977).

To test Hypothesis 3, we calculated main effects on ICG and IES scores of Time (pretreatment to midtreatment; Figure 1; T0 and T1), main effects of Order (EMDR followed by CBT vs. CBT followed by EMDR), and Time \times Order interaction effects, with Condition (IC or

WC) as covariate. To test hypothesis 4, we calculated main effects of Time (pretreatment to posttreatment; Figure 1; T0 and T2), Order (EMDR followed by CBT vs. CBT followed by EMDR), and two way interactions (e.g., Time \times Order).

3 | RESULTS

3.1 | Preliminary analysis

At pretreatment (see Figure 1; T0a) participants in the IC or WC did not significantly differ from each other with regard to gender, recruitment strategy, time since loss, and pretreatment ICG and IES scores. Because participants in the IC and WC did differ with regard to kinship, $\chi^2(1, n = 83) = 10.73, p < .01$, kinship was used as a covariate in all analysis.⁴ Participants allocated to the condition with EMDR followed by CBT did not differ with regard to gender, time since loss, pretreatment ICG and IES scores, and kinship from participants allocated to the condition with CBT followed by EMDR. Because participants did differ from each other with regard to recruitment strategy, $\chi^2(1, n = 85) = 4.71, p < .05$, recruitment strategy was used as a covariate in all analysis.⁵

3.2 | Main outcomes

Pairwise comparisons (calculated on all participants) showed a significant decrease of ICG and IES scores from pretreatment to midtreatment, pretreatment to posttreatment, and pretreatment to follow-up (all p values $< .001$).

Table 2 presents means and standard deviations for the outcome measures by treatment condition.

With regard to Hypothesis 1, changes in ICG and IES scores of participants in the WC from the first pretreatment to the second pretreatment (Figure 1; T0a and T0b)⁶ were compared with changes in ICG and IES scores of participants in the IC from pretreatment to posttreatment (Figure 1; T0 and T2).⁷ As can be seen in Table 3, for both the ICG and the IES, main effects of Time were found, main effects of Condition, and Time \times Condition interaction effects (Hypothesis 1). These findings indicate that participants in the IC who completed the treatment

reported significantly larger reductions in CG and PTSD scores than participants in the WC that did not yet start the treatment.

We further examined whether the treatment effect differed as a function of participants' gender, recruitment strategy, and time since loss. Main effects for Time and Gender were found (ICG and IES; see Table 3), but no Time \times Gender interaction effects (ICG and IES). This indicates that the treatment effect did not significantly differ between men and women. With respect to Recruitment, we found main effects for Time, no main effects of Recruitment, nor Time \times Recruitment interaction effects (ICG and IES, F 's < 1). This indicates that the treatment effect did not significantly vary between participants recruited via support groups and Victim Support and via self-referral (i.e., the website). Regression analysis showed that ICG and IES gain scores (pretreatment minus posttreatment) were not significantly related to time since loss, $\beta = .23, p = .07$, (ICG) and $\beta = .11, p = .38$ (IES; these results were not reported in Table 3).

3.3 | Long-term effects

IES scores remained stable between posttreatment ($M = 28.72$) and follow-up ($M = 31.34$; Figure 1; T2 and T3), $F(1, 44) = 2.39, p = .13$, whereas ICG scores increased significantly from posttreatment ($M = 51.68$) to follow-up ($M = 56.22$), $F(1, 46) = 6.49, p < .05$. However, the number of participants (instead of scores) who scored above the cut-off score for CG at posttreatment did not significantly differ from the number of participants who scored above the cut-off score for CG at follow-up ($p = .29$). Stated otherwise, there were not statistically significantly more participants who scored above the cut-off score for CG at follow-up than at posttreatment.⁸

3.4 | Clinical significance of changes in CG and PTSD during treatment

In Table 4, the percentages of clinically significantly improved participants are reported. Results showed that 23% of the participants improved from the therapy with regard to CG and 37% improved with regard to PTSD symptoms.

TABLE 2 Observed means (and standard deviations) on the ICG and IES by treatment condition

Intention-to-treat-group (N = 85)					
Measure	All participants (n = 85)	IC		WC	
		EMDR-CBT (n = 20)	CBT-EMDR (n = 22)	EMDR-CBT (n = 21)	CBT-EMDR (n = 22)
ICG					
Pretreatment	69.06 (18.26)	69.74 (18.13)	62.01 (14.70)	73.49 (18.57)	71.26 (20.37)
Midtreatment	54.00 (20.64)	50.65 (19.48)	48.59 (17.91)	59.57 (21.93)	58.33 (22.80)
Posttreatment	46.36 (21.21)	48.36 (21.21)	42.24 (18.86)	49.17 (26.35)	46.13 (20.66)
Follow-up	51.79 (23.60)	57.22 (24.02)	39.77 (20.85)	61.40 (22.32)	49.79 (23.86)
IES					
Pretreatment	46.29 (12.51)	47.95 (9.41)	44.77 (13.54)	48.30 (13.81)	44.40 (12.96)
Midtreatment	32.63 (16.68)	31.68 (16.60)	29.50 (18.56)	35.62 (18.76)	34.27 (14.11)
Posttreatment	26.00 (18.08)	31.51 (17.36)	21.51 (15.70)	27.78 (24.63)	22.97 (15.03)
Follow-up	28.73 (18.60)	35.21 (19.51)	22.90 (16.57)	32.44 (21.26)	24.87 (16.86)

Note. IC = Intervention Condition; WC = Waitlist Condition; EMDR = Eye Movement Desensitization and Reprocessing; CBT = Cognitive Behavioural Therapy; ICG = Inventory of Complicated Grief; IES = Impact of Event Scale.

TABLE 3 Summary of results

Hypothesis/measure	Intention to treat Test for difference
Hypothesis 1 ^a	
ICG	
Time	$F(1,70) = 54.28^{***}$
Condition	$F(1,64) = 8.08^{**}$
Time × condition	$F(1,70) = 36.48^{***}$
IES	
Time	$F(1, 70) = 33.69^{***}$
Condition	$F(1, 64) = 7.93^{**}$
Time × condition	$F(1, 70) = 34.90^{***}$
Hypothesis 2 and moderator variables: Pretreatment versus posttreatment	
ICG	
Time	$F(2, 130) = 55.13^{***}$
Gender	$F(1, 83) = 6.05^*$
Time × gender	$F(2, 131) = 1.09, p = .34$
IES	
Time	$F(2, 136) = 40.71^{***}$
Gender	$F(1, 82) = 11.43^{**}$
Time × gender	$F(2, 136) = 1.76, p = .18$
ICG	
Time	$F(2, 129) = 57.87^{***}$
Recruitment	$F(1, 66) = .50, p = .48$
Time × recruitment	$F(2, 129) = .12, p = .88$
IES	
Time	$F(2, 134) = 40.84^{***}$
Recruitment	$F(1, 68) = .25, p = .62$
Time × recruitment	$F(2, 134) = .09, p = .91$
Hypothesis 3: Pretreatment versus midtreatment	
ICG	
Time	$F(1, 67) = 73.41^{***}$
Order	$F(1, 70) = 4.05^*$
Time × order	$F(1, 67) = .64, p = .43$
IES	
Time	$F(1, 72) = 55.44^{***}$
Order	$F(1, 71) = 1.85, p = .18$
Time × order	$F(1, 72) = .06, p = .81$
Hypothesis 4: Pretreatment versus posttreatment	
ICG	
Time	$F(2, 127) = 83.41^{***}$
Order	$F(1, 71) = 4.95^*$
Time × order	$F(2, 128) = .28, p = .75$
IES	
Time	$F(1, 68) = 3.69, p = .06$
Order	$F(2, 132) = 1.02, p = .36$
Time × order	

Note. ICG = Inventory of Complicated Grief; IES = Impact of Event Scale.

^aIC pretreatment versus posttreatment was compared to WC pretreatment versus second pretreatment scores.

* $p < .05$. ** $p < .01$. *** $p < .001$.

We also used a more liberal method, by calculating the percentage of participants who scored under the cut-off scores of the ICG and IES at posttreatment. Based on this method, results showed that 46% of

the participants benefited to a clinically significant degree from the treatment with regard to CG symptoms, and 55% with regard to PTSD symptoms.

3.5 | Effect sizes (ES)

As can be seen in Table 5, ES from pretreatment to posttreatment varied between large ($d > .80$) and very large ($d > 1.30$), with two ES above 1.30 (ICG and IES). ES from pretreatment to follow-up were medium ($d > .50$), large, and very large. This was true for participants in the IC, as well as for participants in the WC during the treatment period. All pretreatment to posttreatment ES of the IC (EMDR followed by CBT and CBT followed by EMDR) were higher than the ES from the first pretreatment to the second pretreatment measure of the WC, when participants did not yet started the treatment ($d < .50$).

3.6 | Secondary outcomes

With regard to Hypothesis 3, we found main effects of Time (ICG and IES). For the ICG, we found a main effect of Order, referring to treatment with EMDR or CBT, in this particular analysis where pretreatment scores were compared with midtreatment scores, but not for the IES.⁹ We did not find Time × Order interaction effects ($F_s < 1$) for ICG and IES. This finding indicates that ICG and IES scores decreased significantly between pretreatment and midtreatment for participants who completed EMDR sessions (without CBT), as well as for participants who completed CBT sessions (without EMDR). Three sessions of EMDR (without CBT) and three sessions of CBT (without EMDR) were equally effective in reducing CG and PTSD.

With regard to the fourth hypothesis, we found main effects of Time (ICG and IES), Order (only ICG), and no Time × Order interaction effects (ICG and IES). These findings indicate that EMDR followed by CBT did not lead to significantly greater reductions in ICG and IES scores relative to CBT followed by EMDR.¹⁰

4 | CONCLUSIONS

The treatment was effective relative to a waitlist control group in reducing self-reported CG and PTSD symptoms, thereby confirming Hypothesis 1. Treatment effect on CG and PTSD symptoms did not vary according to participants' gender, recruitment strategy, and time since loss, thereby disconfirming Hypothesis 2. The results found in this study were comparable for CG symptoms and PTSD symptoms, with the only difference that PTSD symptoms, as measured by the IES, remained stable between posttreatment and 6 month follow-up, whereas CG symptoms, as measured by the ICG, increased significantly between posttreatment and follow-up. However, the increase of ICG scores did not seem clinically relevant, because there were not significantly more participants who scored above the cut-off score for CG at follow-up, compared with posttreatment. Average CG and PTSD scores were significantly lower at midtreatment, when participants completed three sessions of EMDR (without CBT), compared with pretreatment. The same result was found when participants

TABLE 4 Percentages of clinically relevant improved participants at posttreatment

Measure	N = 43 WC during wait period ^a	Completers group (N = 57)				
		All participants (IC and WC during treatment period) ^b	IC		WC during treatment period	
			EMDR-CBT	CBT-EMDR	EMDR-CBT	CBT-EMDR
ICG (%)	0	23	18	23	33	25
IES (%)	2	37	24	54	50	36

Note. IC = Intervention Condition; WC = Waitlist Condition; ICG = Inventory of Complicated Grief; IES = Impact of Event Scale; EMDR = Eye Movement Desensitization and Reprocessing; CBT = Cognitive Behavioural Therapy.

^aParticipants in the WC during the wait period were clinically relevant improved if his or her *second pretreatment* ICG and IES scores were more than two standard deviations below the mean of the first pretreatment score (i.e., smaller than 38 at the ICG and 23 at the IES).

^bParticipants in the IC and WC during treatment period were clinically relevant improved if his or her posttreatment ICG and IES scores were more than two standard deviations below the mean of the pretreatment sample (i.e., smaller than 32 at the ICG and smaller than 23 at the IES).

TABLE 5 Effect sizes with 95% CI on outcome measures by treatment condition and treatment order

Intention-to-treat-group (N = 85)					
Measure	WC during wait period	IC		WC during treatment period	
		EMDR-CBT (n = 20)	CBT-EMDR (n = 22)	EMDR-CBT (n = 21)	CBT-EMDR (n = 22)
ICG					
Pretreatment vs. 2nd pretreatment	0.09 [-0.34; 0.53]				
Pretreatment vs. midtreatment		1.02 [0.35; 1.68]	0.83 [0.16; 1.50]	0.70 [-0.01; 1.41]	0.60 [-0.04; 1.24]
Midtreatment vs. posttreatment		0.11 [-0.53; 0.76]	0.35 [-0.35; 1.04]	0.43 [-0.36; 1.22]	0.56 [-0.12; 1.24]
Pretreatment vs. posttreatment		1.09 [0.41; 1.77]	1.19 [0.50; 1.89]	1.12 [0.36; 1.88]	1.23 [0.54; 1.92]
Pretreatment vs. Follow-up		0.68 [-0.04; 1.40]	1.30 [0.54; 2.07]	0.61 [-0.16; 1.38]	0.94 [0.21; 1.68]
IES					
Pretreatment vs. 2nd pretreatment	-0.04 [-0.49; 0.41]				
Pretreatment vs. midtreatment		1.21 [0.53; 1.99]	0.97 [0.29; 1.64]	0.80 [0.08; 1.52]	0.75 [0.12; 1.40]
Midtreatment vs. posttreatment		0.01 [-0.64; 0.66]	0.47 [-0.24; 1.17]	0.36 [-0.43; 1.15]	0.78 [0.09; 1.48]
Pretreatment vs. posttreatment		1.20 [0.50; 1.89]	1.61 [0.87; 2.35]	1.12 [0.36; 1.87]	1.55 [0.81; 2.28]
Pretreatment vs. follow-up		0.84 [0.11; 1.56]	0.86 [0.13; 1.60]	0.97 [0.16; 1.79]	1.40 [0.62; 2.18]

Note. IC = Intervention Condition; WC = Waitlist Condition; ICG = Inventory of Complicated Grief; IES = Impact of Event Scale; EMDR = Eye Movement Desensitization and Reprocessing; CBT = Cognitive Behavioural Therapy.

completed three sessions of CBT (without EMDR), thereby confirming Hypothesis 3. Participants in both treatment orders (EMDR followed by CBT and CBT followed by EMDR) showed significant lower CG and PTSD symptoms at posttreatment when compared with pretreatment. Orders were equally effective in reducing CG and PTSD symptoms, thereby disconfirming Hypothesis 4. However, statistical power to detect a difference between both orders was limited, so this finding should be interpreted with caution.

5 | DISCUSSION

To our knowledge, this is the first study examining this efficacy in a randomized controlled trial in individuals bereaved by homicidal loss. Participants benefited to a clinically significant degree from the treatment with regard to CG symptoms were 46%, and 55% with regard to PTSD symptoms. This is comparable with the 40% to 60% of participants found in studies in which CBT based interventions or CG treatment were examined in a mixed population of bereaved individuals (Papa, Sewell, Garrison-Diehn, & Rummel, 2013; Rosner et al., 2014). The combination of EMDR and CBT in this sample showed a large effect size in reducing symptomatology.

Our main finding was that the combination of EMDR and CBT was effective in reducing symptoms of CG and PTSD. In theory, it seems less likely that EMDR has a direct beneficial effect on symptoms of CG such as yearning and longing for the deceased. Instead, EMDR is thought to indirectly affect CG symptoms: by desensitization of the traumatic memories that are thought to block positive memories, the repressed positive memories of the loved one can re-emerge. Thereby, integration of the loss in the autobiographical memory and accommodation to the loss is fostered (Solomon & Rando, 2007; Solomon & Shapiro, 1997). EMDR is hypothesized to alter maladaptive thoughts and feelings, but more indirectly than CBT. We therefore hypothesize that EMDR will be more effective in reducing CG when there are traumatic memories associated with the loss, such as in homicidal loss. It has yet to be examined whether EMDR is also effective in diminishing CG after non-homicidal loss, in which less traumatic images are likely to be present in bereaved individuals.

An interesting finding was that PTSD symptoms remained stable from posttreatment to 6-month follow-up, whereas CG symptoms increased significantly, albeit not to a clinically relevant level. It does seem to imply that bereavement related symptoms following homicidal loss are more persistent and enduring than PTSD symptoms. Although the PTSD symptoms related to the death cause may be reduced,

bereaved individuals continue to be confronted with the separation, and a situation in which their child or partner is no longer there. Alternatively, it may be that the treatment modalities used in this study were not very effective, that is, they did not elicit long-term change. Also, it could be that the treatments delivered were not long enough to produce long-term change. As such, dosage might be a topic for future studies.

5.1 | Clinical implications

The brief, 8-session therapy with EMDR and CBT described in this paper seems recommendable as a treatment for homicidally bereaved individuals with elevated levels of CG and PTSD. The treatment is recommendable for both men and women, and for individuals who have lost their loved one recently as well as longer ago. Therapists only need a short training to give the therapy to patients. In our treatment sample, high rates of comorbidity were found; 88% ($n = 75$) of the participants passed the thresholds for clinical significant levels of both CG and PTSD. When clinicians meet bereaved individuals with CG symptoms that seek treatment, they should be aware of possible elevated PTSD, because this pattern of comorbidity is relatively common following homicidal loss (Jordan & Litz, 2014). Psycho-education about the persistent nature of CG symptoms seems advised in order to give homicidally bereaved individuals a realistic impression about the bereavement related symptoms they may experience after completing therapy.

5.2 | Limitations

This study had several limitations. The use of self-report measures to assess CG and PTSD symptoms, rather than a structured clinical interview, is a major limitation and limit the clinical implications of the results of this study. It is known that self-report measures can give an overestimation of PTSD rates (Engelhard et al., 2007). Further, the IES measures only two of the four symptom-clusters of PTSD as distinguished in DSM-5 (APA, 2013), namely, avoidance and intrusions, which are also symptoms of CG. We did not measure negative alterations in cognitions and mood, and alterations in arousal and reactivity. Second, our outcome measures were limited to CG and PTSD, and we did not include measures of depression or anxiety. Other studies reported patterns of comorbidity between CG and depression or anxiety in bereaved individuals following homicidal loss (Maercker & Znoj, 2010; McDevitt-Murphy, Neimeyer, Burke, Williams, & Lawson, 2012; Rheingold, Zinzow, Hawkins, Saunders, & Kilpatrick, 2012). Although our treatment was found effective for individuals with symptoms of CG and PTSD, we do not yet know the effect on bereaved individuals with other patterns of comorbidity. Other limitations were the overrepresentation of women in our sample, limiting generalizations to the male population and the allowance of other types of psychosocial therapy (along with psychotropic medication) during our therapy. From ethical considerations, we did not want to ask participants to interrupt their therapy. We have no evidence that participants received other treatments. The influence of possible medication use or of receiving a different psychotherapy is limited anyway, because this was allowed for

participants in the treatment group, as well as in the waitlist group. Lastly, the duration of the CBT (45 min) and EMDR sessions (45 to 90 min) differed. Although a flexible treatment length dependent upon patient need is standard for EMDR in clinical practice, it cannot be ruled out that the different duration of sessions affected outcomes.

5.3 | Future research

Further research is needed to examine whether a combined treatment of EMDR and CBT together is of added value in situations where grief and trauma are intertwined over offering only one of the two treatment modalities. A major topic that needs further research is the identification of the working mechanism of EMDR in the treatment of CG symptoms. EMDR is hypothesized to reduce CG symptoms by desensitizing the obstacles (c.q. traumatic memories) and related emotions that could foster adjustment and recovery (Solomon & Shapiro, 1997). But knowledge on mechanisms of change of EMDR for CG is still limited. Knowledge about the mechanism of change of EMDR is useful to decide whether EMDR could also be beneficial in treating bereavement related symptoms after non-homicidal loss. The role of traumatic memories is thought to be especially relevant following homicidal loss, whereas feelings of control and self-efficacy are likely to be also present following non-violent losses. When such research proceeds, we hope to gain more insight in the working mechanisms of EMDR.

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CONFLICTS OF INTEREST

None.

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ENDNOTES

- ¹ For participants in the WC, we calculated 8 weeks from the second pre-treatment measure.
- ² Variance of the three levels together of the dependent variable CG at pretreatment was 508.08. Of the total variance, 14% was found to be situated at the participant level (Intraclass Correlation Coefficient (ICC): $73.48/508.08 = 0.14$). At victim level ($233.57/508.08 = 0.46$), 46% of the variance was situated. Variance of the three levels together of the dependent variable PTSD was 334.23. Of the total variance, 14% was situated at the participant level (ICC = 0.14), and 24% at the victim level (ICC = 0.24).
- ³ We then use data of participants in the IC at T0a and data of participants in the WC at T0b. In the text, we then refer to "T0," without the a or b.
- ⁴ The variable kinship originally consisted of six categories (spouses, parents, children, siblings, non-immediate family members, and others; see Table 1). Because the n 's in some categories were too small to run a

- Chi-square test, we made a dichotomous variable of kinship, with parents versus all other groups.
- ⁵ To examine whether individuals who seek voluntarily treatment (by a website) benefitted more than individuals who were recruited by outreach (through support organizations or the governmental organization *Victim Support*, see Section 2.2), we changed the variable *recruitment strategy* into a dichotomous variable (website vs. support organizations and *Victim Support*).
- ⁶ This concerns the following means: 75.62 (ICG at first pretreatment for the WC (T0a)); 48.79 (IES at first pretreatment for the WC (T0a)) and 73.50 (ICG at second pretreatment for the WC (T0b)); and 48.52 (IES at second pretreatment for the WC (T0b)).
- ⁷ This concerns the following means: 72.29 (ICG at pretreatment for the IC); 49.42 (IES at pretreatment for the IC); 51.89 (ICG at posttreatment for the IC); and 30.30 (IES at posttreatment for the IC).
- ⁸ The McNemar test was based on 48 participants who completed the measure at posttreatment and follow-up.
- ⁹ As reported here, we found a main effect of Order for the ICG, implying that (when the different time moments are not taken into account) mean ICG scores differed between participants allocated to EMDR followed by CBT compared with participants allocated to CBT followed by EMDR. This seems contradictory with the finding we described in the heading "preliminary analysis," namely, that participants with EMDR followed by CBT did not differ with regard to pretreatment ICG and IES scores from participants with CBT followed by EMDR. We have reasons to assume that the difference is explained by the inclusion or exclusion of the different covariates (c.q. kinship, recruitment, and condition (IC or WC)). In the analysis described in the preliminary analysis, we did not include the covariates. Then, we did not find a main effect of Order. When including the covariates, we still did not find a statistical difference in ICG and IES scores between participants allocated to EMDR followed by CBT versus participants allocated to CBT followed by EMDR. However, when we included the covariates in an analysis of the residuals, we did find a significant difference. Therefore, we assume that the difference in findings is due to the inclusion or exclusion of the covariates.
- ¹⁰ When we carried out all analysis belonging to Hypotheses 1 through 4 on the completers group, no meaningful differences were found.

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