Chapter 6

Treating Symptoms of Complicated Grief and Posttraumatic Stress Disorder in Homicidally Bereaved Individuals with Cognitive Behavioral Therapy and EMDR: A Randomized Controlled Trial

Abstract

Homicidally bereaved individuals may experience symptoms of Complicated Grief (CG) and Posttraumatic Stress Disorder (PTSD). The effects of Cognitive Behavioral Therapy (CBT) and Eye Movement Desensitization and Reprocessing (EMDR) in the treatment of these symptoms are promising, yet no prior study evaluated the effectiveness of these interventions in the treatment of psychopathology following homicidal loss. The effectiveness of an 8-session treatment encompassing CBT and EMDR to reduce self-rated CG and PTSD symptoms in 85 homicidally bereaved individuals was examined in a Randomized Controlled Trial. Four conditions were used: two intervention conditions, with (1) EMDR followed by CBT, and (2) CBT followed by EMDR, and two waitlist conditions with (3) EMDR followed by CBT, and (4) CBT followed by EMDR. The treatment was effective in reducing CG and PTSD symptoms, from pre-treatment to post-treatment. CG and PTSD symptoms decreased significantly when participants completed EMDR sessions (without CBT sessions), and after completing CBT sessions (without EMDR sessions). Both treatment orders (EMDR followed by CBT and CBT followed by EMDR) were equally effective in reducing CG and PTSD.

Keywords homicide; murder; loss; grief; bereaved; post-traumatic stress disorder; complicated grief; treatment; cognitive-behavioral therapy; eye movement desensitization and reprocessing; randomized controlled trial
Introduction

The death of a loved one may have a great impact on the lives of the people left behind. Most people can deal with their loss without clinical help. A minority, between 10% and 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 occurred sudden and under violent circumstances, as for instance in case of homicidal loss (Kristensen, Weisæth, & Heir, 2012). Bereaved relatives and friends of homicide victims have to miss their loved one, but are also confronted with the traumatic circumstances of the loss; the body of their loved one may be missing, or is violated by another human being. They may be (unwillingly) confronted with the police search for the perpetrator, lawsuits and juridical processes, which may span many years. Homicidal loss, being intentional and violent, can challenge people’s core beliefs about safety, fairness, and the trustworthiness of other people. Hence, traumatic loss is characterized by separation distress (e.g., yearning and longing for the deceased) and traumatic distress, associated with the circumstances surrounding the death (e.g., intrusive images, hyperarousal) (Rynearson & Geoffrey, 1999; Van Denderen, De Keijsor, Huisman, & Boelen, 2016). In the literature, separation distress and traumatic distress are related to symptoms referred to as Complicated Grief (CG) or Persistent Complex Bereavement Disorder (American Psychiatric Association, 2013) and Posttraumatic Stress Disorder (PTSD) (Rynearson & Sinnema, 1999), respectively. 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., 1995a; Prigerson et al., 1995b). While CG shares some symptoms with depression, anxiety, and PTSD, it also exhibits distinctive symptoms (Boelen, Van den Hout, & Van den Bout, 2006; Dillen, Fontaine, & Verhofstadt-Denève, 2009; Prigerson et al., 1995a). For example, anxiety is central to PTSD, whereas separation distress, yearning and seeking reminders of the deceased person are hallmark characteristics of CG (Boelen et al., 2006; Shear, Frank, Houck, & Reynolds, 2005). The prevalence of lifetime PTSD symptoms among homicidally bereaved individuals varies substantially between studies, from 19% to 71% (see for a review Van Denderen, De Keijsor, Kleen, & Boelen, 2015). In a cross-sectional study among 312 homicidally bereaved individuals, self-reported prevalence of clinically relevant levels of psychopathology was 34% (PTSD symptoms) and 82% (CG symptoms) (Van Denderen et al., 2016).

Cognitive Behavioral Therapy (CBT) has shown to be effective in reducing bereavement-related distress symptoms after different types of loss. The rationale of an intervention with CBT for bereaved individuals is based on one of the cognitive behavioral models for CG (Boelen et al., 2006) that draws from models for PTSD (e.g., Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000; Horowitz, 1997). This model states that three processes are crucial in the development and maintenance of CG; 1) problems with the integration of the event in the autobiographical memory, 2) maladaptive cognitions, and 3) avoidance behavior (Boelen et al., 2006). Poor
integration in the autobiographical memory refers to the inadequately integration of the loss as being an irreversible event with other knowledge. The lack of integration has the consequence that thoughts, feelings, and recollections linked with the loss are easily triggered and the loss continues to feel like unreal. Second, people with CG are assumed to have global negative cognitions and to assign catastrophic meanings to their own grief reactions. In general, people have expectations and ideas about (their role in) life such as the expectation that children outlive their parents, that makes their world just. When losing a loved one, one has to adjust ones beliefs to the situation in which their loved one is absent. When negative cognitions such as ‘the future is worthless’ develop, they may avoid social activities such as meetings, going to work and setting new goals which could challenge negative thoughts and foster healthy functioning (Boelen et al., 2006). This relates to the third process, namely that people with CG are inclined to avoid people, feelings or situations reminding them of their loss (Boelen et al., 2006). They may also do (seemingly) the opposite: constantly talk about the deceased, cultivate personal objects of the deceased or continuously ruminate about the deceased and the loss. Compared to natural loss, bereaved individuals following homicidal loss may ruminate more about issues related to the death cause, such as who is the perpetrator, will he be arrested, what punishment will he get, did the victim felt any pain, was he scared et cetera. While individuals with CG approach rather than avoid reminders of the loss, attempts to maintain a strong connection with the deceased could function as a manner to avoid the harsh reality of the death and a life without their loved one. CG is thought to be maintained because anxious avoidance behavior (avoiding upsetting feelings and thoughts related to the loss) prevents integration of the loss, whereas depressive avoidance (withdrawal from social activities) potentially blocks challenging negative thoughts and cognitions (Boelen & Van den Bout, 2010).

The effectiveness of CBT to reduce CG and PTSD symptoms has exclusively been studied in samples of individuals bereaved by non-homicidal loss and samples in which different types of violent loss are grouped together (i.e. homicide, suicide and accidents) (Asukai, Tsuruta, & Saito, 2011; Boelen, De Keijser, Van den Hout, & Van den Bout, 2011; Boelen, De Keijser, Van den Hout, & Van den Bout, 2011; Bryant et al., 2014; Rosner, Pfoh, Kotoucová, & Hagl, 2014; Wagner, Knaevelsrud, and Maercker, 2006). The few studies in which a treatment for homicidally bereaved individuals is examined, are case studies (Parkes, 1993; Rynearson, 1994), which say nothing about the treatment effect compared to control groups. Therefore, until now 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 traumatic loss, there may be obstacles which can interfere with recovery and adjustment, such as memories related to the traumatic death cause and feelings of responsibility for the event, a lack of control, and personal vulnerability and safety (Solomon & Shapiro, 1997). Applying EMDR is hypothesized to be helpful
in reducing CG symptoms by desensitizing traumatic memories and the associated distressing thoughts and painful feelings, thereby accelerating the processing of information held dysfunctionally stored. By reprocessing the mental representations of traumatic material by use of EMDR, neutral or more pleasant memories associated with the loved one can appear, which may foster positive functioning (Solomon & Rando, 2007; Solomon & Shapiro, 1997). The effectiveness 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 pre-test to 9 month follow-up (Sprang, 2001).

To examine the effect of CBT and EMDR on CG and PTSD following homicidal loss, we performed a RCT, using a brief 8-session treatment encompassing CBT and EMDR among 85 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 (Raphael, Jacobs, & Looi, 2013; Shear et al., 2005; Van Denderen et al., 2016), a combination of CBT and EMDR may have added value above and beyond offering one of the two interventions. When combining two interventions, it may be questioned whether clinicians and patients should follow a particular order. 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 & Geoffery, 1999; Rynearson & McCreery, 1993). As noted by Rynearson & McCreery (1993: 258): “treatment of posttraumatic stress phenomena specifically associated with homicide takes precedence over treatment of the grief associated with the death. There is a strong therapeutic presumption that “grief work” must await recovery of a more stable psychological autonomy, which was undermined by the overwhelming trauma of homicide”. This seems to imply that PTSD symptoms must be reduced first, before treating grief symptoms. Since this assumption about the type of symptoms which needs clinical attention first is based on theoretical presumptions rather than tested principles, we also tested whether the treatment effect was influenced by the treatment order (EMDR followed by CBT or CBT followed by EMDR).

Four treatment conditions were compared: two Intervention Conditions (IC), with (1) EMDR followed by CBT, and (2) CBT followed by EMDR, and two Waitlist Conditions (WC) in which people underwent a waiting period of four months, after which they received (3) EMDR followed by CBT, or (4) CBT followed by EMDR. The study design is depicted in Figure 1.
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Figure 1. Study Design.
Hypotheses
The first hypothesis was related to the effectiveness of the treatment when compared to a waitlist control group. The treatment was effective in reducing CG and PTSD symptoms: participants in the IC at post-treatment reported significant lower self-rated CG and PTSD scores when compared to participants in the WC at the second pre-treatment measure (Hypothesis 1). For the following hypotheses (Hypothesis 2-4), participants in the IC and WC were grouped together. While the first hypothesis related to the combined therapy (EMDR and CBT together), Hypothesis 2 related to the effectiveness of EMDR or CBT separately. As can be seen in figure 1, mid-treatment was the moment when participants changed intervention form (i.e., when participants had only completed one of both types of interventions, EMDR or CBT). We hypothesized that participants at mid-treatment, after completing only one type of intervention, reported significant lower CG and PTSD scores than at pre-treatment (Hypothesis 2). Additionally, by comparing between pre-treatment and mid-treatment outcome scores, we also explored the impact of EMDR without CBT, and CBT without EMDR. Hypothesis 3 related to the combined treatment, and was about the effectiveness of the treatment order (EMDR followed by CBT or CBT followed by EMDR). Taking into account the theoretical considerations above about which type of symptoms need clinical attention first, we hypothesized that participants who received EMDR followed by CBT showed a stronger decline in self-rated CG and PTSD from pre-treatment to post-treatment than participants who received CBT followed by EMDR (Hypothesis 3).

Apart from the evaluation of treatment effects, we also examined the effect of several possible moderators of treatment effects, namely the treatment order, gender, recruitment style, 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 aggressive outreach such as phone call or letter mailing (Allumbaugh & Hoyt, 1999; Currier, Neimeyer, & Berman, 2008). Therefore, we hypothesized that participants included through self-referral profited more from the therapy than participants who were approached by the researchers (Hypothesis 4). Because of mixed results with regard to sex and time since loss as a predictor of effect sizes (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 post-treatment to a six month follow-up.

Method
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 et al., 2016; Van Denderen, De Keijser, Gerslma,
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 Inventory of Complicated Grief (ICG) (Prigerson et al., 1995b), the Impact of Event Scale (IES) (Horowitz, Wilner, & Alvarez, 1979), or both. Included participants were adult ≥18 year old, (adoptive- or in law) family members, spouses and friends of homicide victims who understand the Dutch language. To be included, time since loss was minimally six months. Inclusion for the treatment study ran from June 2012 until June 2014. Participants were excluded if they (1) had lost someone through killing without intent, such as a drunken driver; (2) had lost someone through killing in the context of collective violence, such as war; (3) were themselves convicted for the homicide or (4) had psychological problems that interfered with their understanding of the therapy.

**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. First, participants were recruited via three support organizations for homicidally bereaved individuals and victims of violence. The support organizations organize casual meetings in which attendees can share their experiences and in which for instance lawyers are invited to inform members about juridical procedures. The groups have a non-caregiving, non-professional, and non-commercial character (Van Denderen et al., 2016). Second, participants were recruited via Dutch Victim Support, a governmental organization which is the contact agency between homicidally bereaved individuals and the police, lawyers, justice system and other agencies. Since the researchers did not have access to the addresses of individuals because of privacy reasons, participants received the questionnaires from their case manager. Third, participants were recruited via a website created by the authors, containing information about coping with homicidal loss (self-referral).

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.
Figure 2. Flowchart of Study Recruitment.

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.
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. For the recency of the pre-treatment scores on measures tapping the primary outcome variables, we applied the following rule: if the time between pre-treatment scores and the start of the treatment was longer than eight weeks, we regarded the scores obtained from the survey as no longer topical (for participants in the WC, we calculated eight weeks from the second pre-treatment measure). 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 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 participants were excluded by the researchers because the order of the treatment was not correctly followed by the therapist.

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

Study Design and Treatment Conditions

Participants who scored above the cut-off score of the ICG and/or IES at the pre-treatment measure were offered the treatment. Included participants were randomized into one of four conditions: (1) Intervention Condition with EMDR followed by CBT; (2) Intervention Condition with CBT followed by EMDR, (3) Waiting Condition with allocation to EMDR followed by CBT after the waiting period, and (4) Waiting Condition with allocation to CBT followed by EMDR. All four conditions started with two introductory sessions with the same content. Then participants received three sessions of EMDR followed by three sessions of CBT. Participants allocated to CBT followed by EMDR received first three sessions of CBT and then three sessions of EMDR. The CBT sessions lasted 45 minutes, EMDR sessions lasted between 45 and (maximally) 90 minutes. Participants in the IC started the treatment immediately, participants in the WC started treatment after a waiting period of four months. Participants in both conditions were allowed to use other kinds of therapy or medication. The study design is depicted in Figure 1.

For participants in the IC, data were collected at four points; at pre-treatment, mid-treatment (before changing to the other type of intervention), post-treatment and at 6 months follow-up. For participants in the WC, data were collected at five points; the four described above and a second pre-treatment measure, after a waiting period of four months; points of data collection are also shown in Figure 1.

Sample Characteristics

Participants included in the analyses (n = 85) ranged in age from 18 to 80 (SD = 14.9) years; 74% were woman. As reported in Table 1, most participants were parents.
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of the victim (39%). The time that had passed since the homicide ranged from 0.5 to 20 years ($M = 4$ years, $SD = 4.71$). 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%).

Table 1. Demographic Characteristics of the Sample, Described by Treatment Condition.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All participants (n = 85)</th>
<th>IC (n = 20)</th>
<th>WC (n = 22)</th>
<th>EMDR-CBT (n = 21)</th>
<th>CBT-EMDR (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Time since loss (years)</td>
<td>4.21 (4.71)</td>
<td>3.78 (5.53)</td>
<td>4.19 (3.98)</td>
<td>4.43 (5.25)</td>
<td>4.41 (4.46)</td>
</tr>
<tr>
<td>Age participant (years)</td>
<td>48.5 (14.92)</td>
<td>50.05 (14.86)</td>
<td>43.82 (16.04)</td>
<td>51.05 (12.77)</td>
<td>49.41 (15.93)</td>
</tr>
<tr>
<td>Age victim (years)</td>
<td>41.68 (21.02)</td>
<td>49.06 (23.10)</td>
<td>45.95 (20.37)</td>
<td>39.86 (22.17)</td>
<td>33.32 (16.83)</td>
</tr>
<tr>
<td>Female sex participant</td>
<td>63 (74%)</td>
<td>12 (60%)</td>
<td>19 (86.4%)</td>
<td>15 (71.4%)</td>
<td>17 (77.3%)</td>
</tr>
<tr>
<td>Female sex victim</td>
<td>33 (39.30%)</td>
<td>9 (45%)</td>
<td>8 (36.4%)</td>
<td>11 (52.4%)</td>
<td>5 (22.7%)</td>
</tr>
<tr>
<td>Participant is...from the victim:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Spouse</td>
<td>15 (17.9%)</td>
<td>5 (25%)</td>
<td>6 (27.3%)</td>
<td>2 (9.5%)</td>
<td>2 (9.1%)</td>
</tr>
<tr>
<td>Parent</td>
<td>33 (39.3%)</td>
<td>4 (20%)</td>
<td>5 (22.7%)</td>
<td>11 (52.4%)</td>
<td>13 (59.1%)</td>
</tr>
<tr>
<td>Child</td>
<td>18 (21.4%)</td>
<td>7 (35%)</td>
<td>4 (18.2%)</td>
<td>4 (19%)</td>
<td>3 (13.6%)</td>
</tr>
<tr>
<td>Sibling</td>
<td>11 (13.1%)</td>
<td>3 (15%)</td>
<td>5 (22.7%)</td>
<td>3 (14.3%)</td>
<td>-</td>
</tr>
<tr>
<td>Non-immediate family member</td>
<td>4 (4.8%)</td>
<td>-</td>
<td>2 (9.1%)</td>
<td>1 (4.8%)</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>Other (friend, acquaintance)</td>
<td>2 (2.4%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2 (9.1%)</td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG symptoms</td>
<td>80 (94.1%)</td>
<td>19 (95%)</td>
<td>20 (90.9%)</td>
<td>20 (95.2%)</td>
<td>21 (95.5%)</td>
</tr>
<tr>
<td>PTSD symptoms</td>
<td>80 (94.1%)</td>
<td>20 (100%)</td>
<td>19 (86.4%)</td>
<td>20 (95.2%)</td>
<td>21 (95.5%)</td>
</tr>
<tr>
<td>Both CG and PTSD</td>
<td>75 (88.2%)</td>
<td>19 (95%)</td>
<td>17 (77.3%)</td>
<td>19 (90.5%)</td>
<td>20 (90.9%)</td>
</tr>
<tr>
<td>Recruited by</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Victim help</td>
<td>42 (49.4%)</td>
<td>14 (70%)</td>
<td>9 (40.9%)</td>
<td>12 (57.1%)</td>
<td>7 (31.8%)</td>
</tr>
<tr>
<td>Support groups</td>
<td>24 (28.2%)</td>
<td>4 (20%)</td>
<td>3 (13.6%)</td>
<td>6 (28.6%)</td>
<td>11 (50%)</td>
</tr>
<tr>
<td>Media (self-referral)</td>
<td>19 (22.4%)</td>
<td>2 (10%)</td>
<td>10 (45.5%)</td>
<td>3 (14.3%)</td>
<td>4 (18.2%)</td>
</tr>
</tbody>
</table>

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

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 (SPSS), and was conducted after obtaining written informed consent from the participant.

Treatment

Treatment was conducted individually for all participants. Therapists used a standard Dutch EMDR treatment protocol (De Jongh & Ten Broeke, 2003). EMDR
is thought to help integrating painful memories regarding the traumatic loss in
the autobiographic memory and decrease the vividness of intrusions and aversive
cognitions. EMDR was performed by means of alternating eye movements.

In the CBT module, the therapist explained the rationale of CBT to the 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).
Behavioral experiments and cognitive restructuring were used to challenge the
sustainability and usability of non-adaptive thoughts and to formulate more positive
and adaptive thoughts.

Both CBT and EMDR were carried out by licensed mental health psychologists and
psychotherapists. They were trained by the second and last author (both licensed
cognitive behavioral psychotherapists and licensed supervisors) in CBT and EMDR
and followed a strict treatment protocol. Therapist had the opportunity to discuss
questions regarding the treatment with these two authors. To ensure whether
the treatment protocol was followed, all therapists kept a logbook in which they
described duration and content of all sessions. The logbooks were checked on
treatment adherence by the first author. 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 were subjected to more EMDR sessions than the treatment
protocol allowed.

Ethics Statement

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

Measures

Demographic and Homicide-related Information

Participants received a self-constructed questionnaire with socio-demographic
questions.

Inventory of Complicated Grief (ICG)

The 29 item ICG is a measure of CG (Prigerson, et al., 1995b, Dutch version, Boelen,
Van den Bout, De Keijser, & Hoijtink, 2003). Items are rated on 5-point scales ranging
from “never” to “always”. Examples of questions are “I have the feeling that part of
me is died with him or her” and “I feel tense, irritable or shocked since his or her
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 cutoff for the presence of clinical levels
of CG (Boelen, De Keijser & Van den Bout, 2001). Cronbach’s alpha was .92, based on
data completed at pre-treatment.

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 shock: intrusions and avoidance. Participants completed the items based on their thoughts and feelings regarding the last seven days. Scores range between 0 and 75. Based on Horowitz et al. (1979), a score of 26 or higher indicated post traumatic symptoms. Sample items include “I felt as if it hadn’t happened or wasn’t real”, and “I tried to remove it from my memory”. The alpha in this sample (based on the pre-treatment measure) was .83. Since 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.

**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.

**Statistical Analyses**

Analyses were conducted using SPSS and Statistical Analysis System (SAS). Analyses in both programs gave similar results. Following previous research (Van Denderen et al., 2014, 2016), scale scores were calculated for participants who answered more than 50% of the items. When the scale 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), we conducted a three level multilevel analysis, in which time (level 1) is nested in participants (level 2) and participants are nested in victims (level 3)\(^1\). Time (pre-treatment, mid-treatment, post-treatment, 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.

**Intention to treat sample**

The analyses were also conducted at the intention-to-treat sample, which was 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 post-

\(^1\) Variance of the three levels together of the dependent variable CG at pre-treatment 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). 46% of the variance was situated at victim level (233.57/508.08 = 0.46). 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).
treatment and follow-up, his scores were only included at pre-treatment and mid-
treatment.

Preliminary analysis

Before testing the hypotheses, we examined whether participants in the IC or
WC differed from each other at pre-treatment (see Figure 1, T0a) with regard to ICG
and IES scores and time since loss (using independent t-tests), and gender, kinship,
and recruitment strategy (using Chi-square tests). Additionally, we also examined
whether participants treated with EMDR followed by CBT differed at pre-treatment
(Fig. 1, T0a) on ICG and IES scores, time since loss, gender, kinship and recruitment
style from participants treated with CBT followed by EMDR (based on participants
in the IC and WC together). This was done because differences at pre-treatment on
these variables could hypothetically 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 take the differences into account by
adding these variables as covariates in all analyses concerning these hypotheses.

Hypothesis testing

To test Hypothesis 1, we first compared pre-treatment to second pre-treatment
ICG and IES scores of participants in the WC on the one hand (Fig. 1, T0a and T0b),
with pre-treatment to post-treatment ICG and IES scores of participants in the IC on
the other hand (Fig. 1, T0a and T2). We calculated main effects of Time, Condition (IC
or WC), and a Time x Condition interaction effect on changes in ICG and IES scores.

To test Hypothesis 2, 3, and 4, we combined participants in the IC and WC, after
the participants in the WC had also completed the treatment. To test Hypothesis
2, we calculated main effects on ICG and IES scores of Time (pre-treatment to mid-
treatment, Fig. 1, T0 and T1), main effects of Order (EMDR followed by CBT and CBT
followed by EMDR) and Time x Order interaction effects, with Condition (IC or WC) as
covariate.

To test Hypothesis 3 and 4, we calculated main effects of Time, Order (EMDR
followed by CBT vs. CBT followed by EMDR), Recruitment style and Gender, and two
way interactions (e.g., Time x Order, Time x Recruitment style, Time x Gender) on
changes in symptoms of CG and PTSD from pre-treatment to post-treatment (Fig.
1, T0 and T2, using, as noted, 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 (pre-treatment minus post-treatment,
Fig. 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

\[ \text{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}
\[ \text{“T0”, without the a or b.} \]
from post-treatment to a six month follow-up (Fig. 1, T2 and T3). We tested whether the proportion participants who scored above the cut-off score at post-treatment 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 the results were clinically relevant. Participants were considered clinically relevant improved if their post-treatment ICG and IES scores were more than two standard deviations below the mean of the pre-treatment sample (see the results section for the exact means which 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 post-treatment.

Cohen’s $d$ statistics were used to calculate Effect Sizes (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).

Results

Preliminary Analysis (Intention to treat group, $n = 85$)

At pre-treatment (see Figure 1, T0a) participants in the IC or WC did not statistically differ from each other with regard to gender, recruitment, time since loss and pre-treatment 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. Participants allocated to the condition with EMDR followed by CBT did not differ with regard to gender, time since loss, pre-treatment 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 style, $\chi^2 (2, n = 85 ) = 4.71, p < .05$, recruitment style was used as a covariate in all analysis.

Treatment Effects in the Intention to treat group ($n = 85$)

Pairwise comparisons showed a significant decrease of ICG and IES scores from pre- to mid-treatment, pre- to post-treatment and pre- to follow-up (all $p$-values <.001). Table 2 presents means and standard deviations for the outcome measures by treatment condition.

---

1 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 analysis we made a dichotomous variable of kinship, with parents versus all other groups.
With regard to Hypothesis 1, ICG and IES scores of participants in the WC at the first pre-treatment to the second pre-treatment (Fig. 1, T0a and T0b) were compared with ICG and IES scores of participants in the IC at pre-treatment to post-treatment (Fig. 1, T0 and T2). As can be seen in Table 3, for both the ICG as well as the IES, main effects of Time was found, $F(1, 70) = 54.28, p < .001$ (ICG) and $F(1, 70) = 33.69, p < .001$ (IES); main effect of Conditions, $F(1, 64) = 8.08, p < .01$ (ICG) and $F(1, 64) = 7.93, p < .01$ (IES); and Time x Condition interaction effects, $F(1, 70) = 36.48, p < .001$ (ICG) and $F(1, 70) = 34.90, p < .001$ (IES). 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 started the treatment.
Treating Symptoms of Complicated Grief and Posttraumatic Stress Disorder

Table 3. Summary of Results.

<table>
<thead>
<tr>
<th>Hypothesis/Measure</th>
<th>Completers</th>
<th>Intention to treat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test for difference</td>
<td>Test for difference</td>
</tr>
</tbody>
</table>

**Hypothesis 1#**

**ICG**
- **Time**  \( F(1,53) = 41.92^{**} \)  \( F(1,70) = 54.28^{**} \)
- **Condition**  \( F(1,45) = 4.12^{†} \)  \( F(1,64) = 8.08^{*} \)
- **Time x Condition**  \( F(1,53) = 22.29^{**} \)  \( F(1,70) = 36.48^{**} \)

**IES**
- **Time**  \( F(1,51) = 27.14^{**} \)  \( F(1,70) = 33.69^{**} \)
- **Condition**  \( F(1,39) = 4.24^{†} \)  \( F(1,64) = 7.93^{*} \)
- **Time x Condition**  \( F(1,51) = 23.53^{**} \)  \( F(1,70) = 34.90^{**} \)

**Hypothesis 2: pre-treatment versus mid-treatment**

**ICG**
- **Time**  \( F(1,51) = 56.39^{**} \)  \( F(1,67) = 73.41^{**} \)
- **Order**  \( F(1,47) = 3.15, p = .08 \)  \( F(1,70) = 4.05^{†} \)
- **Time x Order**  \( F(1,51) = .66, p = .42 \)  \( F(1,67) = .64, p = .43 \)

**IES**
- **Time**  \( F(1,52) = 37.88^{**} \)  \( F(1,72) = 55.44^{**} \)
- **Order**  \( F(1,13) = 1.14, p = .30 \)  \( F(1,71) = 1.85, p = .18 \)
- **Time x Order**  \( F(1,52) = .11, p = .75 \)  \( F(1,72) = .06, p = .81 \)

**Hypothesis 3: pre-treatment versus post-treatment**

**ICG**
- **Time**  \( F(2,102) = 64.44^{**} \)  \( F(2,127) = 83.41^{**} \)
- **Order**  \( F(1,49) = 3.89, p = .05 \)  \( F(1,71) = 4.95^{†} \)
- **Time x Order**  \( F(2,102) = .33, p = .72 \)  \( F(2,128) = .28, p = .75 \)

**IES**
- **Time**  \( F(2,102) = 45.12^{**} \)  \( F(2,132) = 57.54^{**} \)
- **Order**  \( F(1,39) = 2.07, p = .16 \)  \( F(1,68) = 3.69, p = .06 \)
- **Time x Order**  \( F(2,102) = 1.09, p = .34 \)  \( F(2,132) = 1.02, p = .36 \)

**Hypothesis 4 and moderator variables: pre-treatment versus post-treatment**

**ICG**
- **Time**  \( F(2,102) = 34.79^{**} \)  \( F(2,130) = 55.13^{**} \)
- **Gender**  \( F(1,45) = .60, p = .44 \)  \( F(1,83) = 6.05^{†} \)
- **Time x Order**  \( F(2,102) = .51, p = .60 \)  \( F(2,131) = 1.09, p = .34 \)

**IES**
- **Time**  \( F(2,102) = 26.48^{**} \)  \( F(2,136) = 40.71^{**} \)
- **Gender**  \( F(1,39) = 1.18, p = .28 \)  \( F(1,82) = 11.43^{*} \)
- **Time x Order**  \( F(2,102) = .70, p = .50 \)  \( F(2,136) = 1.76, p = .18 \)

**ICG**
- **Time**  \( F(2,102) = 48.31^{**} \)  \( F(2,129) = 57.87^{**} \)
- **Recruitment**  \( F(1,49) = .54, p = .47 \)  \( F(1,66) = 50, p = .48 \)
- **Time x Recruitment**  \( F(2,102) = .47, p = .63 \)  \( F(2,129) = .12, p = .88 \)

**IES**
- **Time**  \( F(2,101) = 34.53^{**} \)  \( F(2,134) = 40.84^{**} \)
- **Recruitment**  \( F(1,44) = .16, p = .69 \)  \( F(1,68) = .25, p = .62 \)
- **Time x Recruitment**  \( F(2,101) = .37, p = .69 \)  \( F(2,134) = .09, p = .91 \)

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

# IC pre-treatment versus post-treatment was compared to WC pre-treatment versus second pre-treatment scores

† \( p < .05 \), * \( p < .01 \), ** \( p < .001 \)
With regard to Hypothesis 2, we compared pre- to mid-treatment ICG and IES scores (Fig. 1, T0 and T1) from participants who completed EMDR sessions \((n = 41)\) with participants who completed CBT sessions \((n = 44)\) (IC and WC together). Condition (IC or WC) was included as a covariate. We found main effects of Time, \(F(1, 67) = 73.41, p < .001\) (ICG) and \(F(1, 72) = 55.44, p < .001\) (IES). For the ICG, we found a main effect of Order, (referring to treatment with EMDR or CBT, in this particular analysis where pre-treatment scores were compared with mid-treatment scores), \(F(1, 70) = 4.05, p < .05\). For the IES, we did not find a main effect of Order, \(F(1, 71) = 1.85, p = .18\). For both the ICG and IES, we did not find Time x Order interaction effects, \(F's < 1\) for ICG and IES. This finding indicates that ICG and IES scores decreased significantly between pre-treatment and mid-treatment 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 third hypothesis, we examined whether the effect of the combined treatment (pre-to post-treatment) differed according to treatment order (EMDR followed by CBT or CBT followed by EMDR). We compared ICG and IES scores of participants allocated to EMDR followed by CBT with participants allocated to CBT followed by EMDR from pre- to post-treatment (Fig 1, T0 and T2), using data from all participants from both the IC and WC conditions. Condition (IC or WC) was used as a covariate. For the ICG and IES, we found main effects of Time, \(F(2, 127) = 83.41, p < .001\) (ICG) and \(F(2, 132) = 57.54, p < .001\) (IES). For the ICG, we found a main effect of Order, \(F(1, 71) = 4.95, p < .05\). For the IES, there was a trend toward a main effect of Order, \(F(1, 68) = 3.69, p = .06\). For the ICG and IES, we did not find Time x Order interaction effects, \(F < 1\) (ICG) and \(F(2, 132) = 1.02, p = .36\) (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.

**Treatment Effects in the Completers group \((n = 57)\)**

Comparable results were found for the completers group. Pairwise comparisons showed a significant decrease of ICG and IES scores from pre-treatment to mid-treatment, pre-treatment to post-treatment and pre-treatment to follow-up (all \(p\)-values \(< .001\)) (calculated with data from all participants in the IC and WC together).

With regard to Hypothesis 1, we found for both the ICG as well as the IES main effects of Time, \(F(1, 53) = 41.92, p < .001\) (ICG) and \(F(1, 51) = 27.14, p < .001\) (IES); main effects of Condition, \(F(1, 45) = 4.12, p < .05\) (ICG) and \(F(1, 39) = 4.24, p < .05\) (IES); and Time x Condition interaction effects, \(F(1, 53) = 22.29, p < .001\) (ICG).

\(^4\) As reported here, we found a main effect of Order for the ICG, implying that (when the different time points are not taken into account), mean ICG scores differed between participants allocated to EMDR followed by CBT compared to 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 pre-treatment ICG and IES scores from participants with CBT followed by EMDR. We have reasons to assume that the difference is explained by the in- 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 in- or exclusion of the covariates.
and $F(1, 51) = 23.53, p < .001$ (IES). These findings indicate that participants who completed the treatment report significantly larger reductions in CG and PTSD scores than participants in the WC which did not yet started the treatment.

With regard to Hypothesis 2, we compared pre- to mid-treatment ICG and IES scores (Fig 1, T0 and T1), from participants who completed EMDR sessions ($n = 32$) with participants who completed CBT sessions ($n = 25$) (IC and WC together). Condition (IC or WC) was used as a covariate. We found main effects of Time, $F(1, 51) = 56.39, p < .001$ (ICG) and $F(1, 52) = 37.88, p < .001$ (IES); no main effects of Order, (referring to treatment with EMDR or CBT, in this particular analysis), $F(1, 47) = 3.15, p = .08$ (ICG) and $F(1, 13) = 1.14, p = .30$ (IES) and no Time x Order interaction effects, $F's < 1$ for ICG and IES. These findings indicate that ICG and IES scores decreased significantly between pre-treatment and mid-treatment for participants who completed the EMDR sessions only, or CBT sessions only, without significant differences in changes between these participants.

With regard to the third hypothesis, we examined whether the effect of the combined treatment (pre-to post-treatment, Fig. 1, T0 and T2) differed according to treatment order (EMDR followed by CBT or CBT followed by EMDR). We compared ICG and IES scores from pre- to post-treatment (IC and WC together) of participants allocated to EMDR followed by CBT with participants allocated to CBT followed by EMDR. Condition (IC or WC) was used as a covariate. For the ICG and IES, we found main effects of Time, $F(2, 102) = 64.44, p < .001$ (ICG) and $F(2, 102) = 45.12, p < .001$ (IES); no main effects of Order, $F(1, 49) = 3.89, p = .05$ (ICG) and $F(1, 39) = 3.07, p = .16$ (IES), and no Time x Order interaction effects, $F < 1$ (ICG) and $F(2, 102) = 1.09, p = .34$ (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.

**Moderators in the Intention to treat group ($n = 85$)**

We further examined whether the treatment effect differed as a function of participants gender, recruitment style, and time since loss. In these analyses, all participants were included (participants in the IC, allocated to EMDR followed by CBT and participants allocated to CBT followed by EMDR, and participants in the WC, allocated to EMDR followed by CBT and participants allocated to CBT followed by EMDR). Main effects and interaction effects of the moderator analyses are summarized in Table 3. The statistics reported in this part of the text relate to the interaction effects. For the statistics of the main effects, we refer to Table 3. Main effects for Time and Gender were found (see Table 3). No Time x Gender interaction effects were found, neither for the ICG nor the IES, $F(2, 131) = 1.09, p = .34$ (ICG) and $F(2, 136) = 1.76, p = .18$ (IES). This indicates that the treatment effect did not significantly differ between men and women. With respect to Recruitment, Table 3 shows that main effects for Time, no main effects of Recruitment, nor Time x Recruitment interaction effects were found, for the ICG as well as the IES, $F's < 1$ for ICG and IES. 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
(pre-treatment minus post-treatment) 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).

**Moderators in the Completers group ($n = 57$)**

Comparable results were found in the completers group. The statistics reported in this part of the text relate to the interaction effects. For the statistics of the main effects, we refer to Table 3. We found main effects for Time, no main effects for Gender, nor Time x Gender interaction effects, for the ICG as well as the IES, $F$'s < 1. This indicates that the treatments effect did not significantly differ between males and females. Further, main effects for Time, no main effects of Recruitment, nor Time x Recruitment interaction effects were found, for the ICG as well as the IES, $F$'s < 1. This indicates that the treatment effects did not significantly vary between participants recruited by the authors (i.e. via support groups and Victim Support) or via self-referral (i.e. the website). ICG and IES gain scores (pre-treatment minus post-treatment) were not significantly related to time since loss, $\beta = .22, p = .12$, (ICG) and $\beta = .05, p = .71$ (IES) (these results were not reported in Table 3).

**Long term effects in the Intention to treat group**

In the intention to treat group, IES scores remained stable between post-treatment and follow-up (Fig. 1, T2 and T3), $F(1, 44) = 2.39, p = .13$). ICG scores significantly increased from post-treatment to follow-up, $F(1, 46) = 6.49, p < .05$. However, the number of participants (instead of scores) who scored above the cut-off score for CG at post-treatment 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 significant more participants who scored above the cut-off score for CG at follow-up than at post-treatment.5

**Long term effects in the Completers group**

Comparable results were found in the completers group. IES scores remained stable between post-treatment and follow-up, $F(1, 38) = 1.50, p = .23$, whereas ICG scores significantly increased from post-treatment to follow-up, $F(1, 40) = 6.45, p < .05$. However, again the number of participants who scored above the cut-off score for CG at post-treatment again 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, the number of participants that scored above the cut-off score at post-treatment did not significantly increase at follow-up.6

**Clinical relevancy of Treatment Effects**

In Table 4, the percentages of clinically relevant improved participants are reported. Participants were clinically relevant improved if post-treatment ICG and IES scores were more than two standard deviations below the mean of the pre-treatment sample (Jacobson & Truax, 1991). Results showed that 23% of the

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5 The McNemar test was based on 48 participants who completed the measure at posttreatment and follow-up.

6 The McNemar test was based on 43 participants who completed the measure at posttreatment and follow-up.
participants improved from the therapy with regard to CG and 37% improved with regard to PTSD symptoms.

**Table 4.** Percentages of clinically relevant improved participants at posttreatment.

<table>
<thead>
<tr>
<th>Measure</th>
<th>WC during wait period †</th>
<th>All participants (IC and WC during treatment period) ††</th>
<th>IC</th>
<th>WC during treatment period</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICG</td>
<td>0%</td>
<td>23%</td>
<td>18%</td>
<td>33%</td>
</tr>
<tr>
<td>IES</td>
<td>2%</td>
<td>37%</td>
<td>24%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Note. SD = Standard Deviation; IC = Intervention Condition; WC = Waitlist Condition; ICG = Inventory of Complicated Grief; IES = Impact of Event Scale
† Participants in the WC during the wait period were clinically relevant improved if his or her second pre-treatment ICG and IES scores were more than two standard deviations below the mean of the first pre-treatment score (i.e., smaller than 38 at the ICG and 23 at the IES).
†† Participants in the IC and WC during treatment period were clinically relevant improved if his or her post-treatment ICG and IES scores were more than two standard deviations below the mean of the pre-treatment sample (i.e., smaller than 32 at the ICG and smaller than 23 at the IES).

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 post-treatment. Based on this method, results showed that 46% of the participants benefited to a clinical relevant degree from the treatment with regard to CG symptoms, and 55% with regard to PTSD symptoms.

**Effect Sizes (ES)**

ES in the completers and intention to treat group were comparable (see Table 5, row wise). ES of the ICG and IES from pre- to post-treatment were large ($d > .80$) and very large ($d > 1.30$). ES of the ICG and IES from pre-treatment 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 pre-to post-treatment ESs of the IC (EMDR followed by CBT as well as CBT followed by EMDR) were higher than the ESs from the first pre-treatment to the second pre-treatment measure of the WC, when participants did not yet started the treatment ($d < .50$).
### Table 5. Effect Sizes with 95% CI on Outcome Measures by Treatment Condition and Treatment Order.

**Completers group (N = 57)**

<table>
<thead>
<tr>
<th>Measure</th>
<th>WC during wait period</th>
<th></th>
<th>WC during treatment period</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMDR-CBT (n = 17)</td>
<td></td>
<td>EMDR-CBT (n = 15)</td>
<td></td>
</tr>
<tr>
<td>ICG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- vs. 2nd pre-treatment</td>
<td>0.16 [-0.37; 0.70]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- vs. mid-treatment</td>
<td>1.02 [0.31; 1.73]</td>
<td>0.69 [-0.12; 1.49]</td>
<td>0.78 [0.01; 1.55]</td>
<td>0.78 [-0.07; 1.63]</td>
</tr>
<tr>
<td>Mid- vs. post-treatment</td>
<td>0.11 [-0.57; 0.78]</td>
<td>0.40 [-0.39; 1.19]</td>
<td>0.43 [-0.36; 1.22]</td>
<td>0.47 [-0.36; 1.30]</td>
</tr>
<tr>
<td>Pre- vs. post-treatment</td>
<td>1.10 [0.38; 1.82]</td>
<td>1.00 [0.19; 1.82]</td>
<td>1.17 [0.35; 1.99]</td>
<td>1.23 [0.36; 2.11]</td>
</tr>
<tr>
<td>Pre-treatment vs. follow-up</td>
<td>0.67 [-0.05; 1.4]</td>
<td>1.07 [0.21; 1.93]</td>
<td>0.69 [-0.13; 1.52]</td>
<td>1.02 [0.12; 1.90]</td>
</tr>
</tbody>
</table>

| IES                          |                       |   |                            |   |
| Pre- vs. 2nd pre-treatment   | -0.01 [-0.56; 0.54]   |   |                            |   |
| Pre- vs. mid-treatment       | 1.17 [0.45; 1.90]     | 0.89 [0.07; 1.71] | 0.95 [0.16; 1.73] | 0.71 [-0.14; 1.55] |
| Mid- vs. post-treatment      | 0.07 [-0.60; 0.75]    | 0.65 [-0.16; 1.45] | 0.36 [-0.43; 1.15] | 0.76 [-0.11; 1.63] |
| Pre- vs. post-treatment      | 1.21 [0.48; 1.94]     | 1.62 [0.73; 2.50] | 1.21 [0.38; 2.03] | 1.39 [0.48; 2.30] |
| Pre-treatment vs. follow-up  | 0.95 [0.21; 1.7]      | 1.56 [0.65; 2.48] | 1.12 [0.22; 1.99] | 1.27 [0.35; 2.19] |

**Intention-to-treat-group (N = 85)**

<table>
<thead>
<tr>
<th>Measure</th>
<th>WC during wait period</th>
<th></th>
<th>WC during treatment period</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMDR-CBT (n = 20)</td>
<td></td>
<td>EMDR-CBT (n = 21)</td>
<td></td>
</tr>
<tr>
<td>ICG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- vs. 2nd pre-treatment</td>
<td>0.09 [-0.34; 0.53]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- vs. mid-treatment</td>
<td>1.02 [0.35; 1.68]</td>
<td>0.83 [0.16; 1.50]</td>
<td>0.70 [-0.01; 1.41]</td>
<td>0.60 [-0.04; 1.24]</td>
</tr>
<tr>
<td>Mid- vs. post-treatment</td>
<td>0.11 [-0.53; 0.76]</td>
<td>0.35 [-0.35; 1.04]</td>
<td>0.43 [-0.36; 1.22]</td>
<td>0.56 [-0.12; 1.24]</td>
</tr>
<tr>
<td>Pre- vs. post-treatment</td>
<td>1.09 [0.41; 1.77]</td>
<td>1.19 [0.50; 1.89]</td>
<td>1.12 [0.36; 1.88]</td>
<td>1.23 [0.54; 1.92]</td>
</tr>
<tr>
<td>Pre-treatment vs. follow-up</td>
<td>0.68 [-0.04; 1.40]</td>
<td>1.30 [0.54; 2.07]</td>
<td>0.61 [-0.16; 1.38]</td>
<td>0.94 [0.21; 1.68]</td>
</tr>
</tbody>
</table>

| IES                          |                       |   |                            |   |
| Pre- vs. 2nd pre-treatment   | -0.04 [-0.49; 0.41]   |   |                            |   |
| Pre- vs. mid-treatment       | 1.21 [0.53; 1.99]     | 0.97 [0.29; 1.64] | 0.80 [0.08; 1.52] | 0.75 [0.12; 1.40] |
| Mid- vs. post-treatment      | 0.01 [-0.64; 0.66]    | 0.47 [-0.24; 1.17] | 0.36 [-0.43; 1.15] | 0.78 [0.09; 1.48] |
| Pre- vs. post-treatment      | 1.20 [0.50; 1.89]     | 1.61 [0.87; 2.35] | 1.12 [0.36; 1.87] | 1.55 [0.81; 2.28] |
| Pre-treatment 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
Discussion

This study aimed to determine the effectiveness of a combined treatment encompassing CBT and EMDR in individuals bereaved by homicidal loss with clinical levels of self-rated CG and PTSD. The treatment was effective relative to a waitlist control group in reducing self-reported CG and PTSD symptoms, thereby confirming Hypothesis 1. Average CG and PTSD scores were significantly lower at mid-treatment, when participants completed three sessions of EMDR (without CBT), compared to pre-treatment. The same result was found when participants completed three sessions of CBT (without EMDR), thereby confirming Hypothesis 2. Participants in both treatment orders (EMDR followed by CBT and CBT followed by EMDR) showed significant lower CG and PTSD symptoms at post-treatment when compared with pre-treatment. Orders were equally effective in reducing CG and PTSD symptoms, thereby disconfirming Hypothesis 3. Treatment effect on CG and PTSD symptoms did not vary according to participants’ gender, recruitment strategy and time since loss, thereby disconfirming Hypothesis 4. 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 post-treatment and a six month follow-up, whereas CG symptoms, as measured by the ICG, increased significantly between post-treatment and follow-up. However, the increase of ICG scores was not clinically relevant, since there were not significantly more participants who scored above the cut-off score for CG at follow-up, compared to post-treatment.

To our knowledge, this is the first study examining this effectiveness in an RCT in individuals bereaved by homicidal loss. 46% of the participants benefited to a clinical significant degree from the treatment with regard to CG symptoms, and 55% with regard to PTSD symptoms. This is comparable to the 40% to 60% of participants found in other studies in which CBT based interventions or CG treatment were examined (Papa, Sewall, 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. Given the large to very large effect sizes, a relatively small sample is needed to replicate this study.

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 reemerge. Thereby, integration of the traumatic loss in the autobiographical memory and accommodation to the loss is fostered (Solomon & Rando, 2007; Solomon & Shapiro, 1997). EMDR is hypothesized to reprocess maladaptive thoughts and feelings, but more indirectly than CBT. The study of Sprang (2001) seems to confirm the hypothesis that the efficacy of EMDR in the treatment of CG lies in its ability to increase positive memories of the deceased one; Sprang found more positive memories in individuals who received EMDR
than participants in a comparison group who received so called Guided Mourning therapy, an approach that is similar to exposure. In sum, EMDR does not seem to alleviate CG symptoms directly, but indirectly, by alleviating the obstacles (i.e. the intrusions related to the traumatic loss) for recovery (Solomon & Shapiro, 1997). We hypothesize therefore that EMDR will be more effective in reducing CG when related to traumatic loss, than when related to non-traumatic loss. It has yet to be examined whether EMDR could also be applicable in CG after non-traumatic loss, in which less traumatic images are likely to be present in bereaved individuals.

Another main finding was that we did not find evidence that providing EMDR before CBT led to greater improvement in CG or PTSD symptoms than when these interventions are applied in the reverse order. This finding could be related to our other finding, that CBT and EMDR, when examined separately from pre-treatment to mid-treatment, were effective to reduce both CG and PTSD symptoms. A possible explanation for this finding is the overlap between symptoms of CG and PTSD, such as intrusive thoughts, feelings of numbness and avoidance (Maercker, & Znoj, 2010). Correspondingly, some items on the ICG and IES are much alike and hard to distinguish from each other (e.g. “My feeling about it was numbed” (IES, item 15) and “I feel like I’m numb since he/she is deceased” (ICG, item 17)). As noted above, EMDR and CBT both direct or indirectly reduce avoidance behavior. Accordingly it is likely that both interventions contribute to a decrease in CG and PTSD symptoms, making the order of the interventions possibly less relevant.

The working mechanism of EMDR on CG and the influence of the treatment order on CG and PTSD symptoms is still indefinite. We did not systematically assess changes in cognitions and avoidance during the treatment. Therefore, we cannot draw conclusions about the relative importance of both mechanisms following homicidal loss and about the influence of EMDR and CBT on the suggested mechanisms. To gain more insight in the importance of the treatment order, it should be accurately examined for both orders (EMDR followed by and CBT followed by EMDR) which traumatic symptoms are altered in the first part of the therapy, and which CG symptoms are altered in the second part of the therapy, taking into account the overlap in symptoms between PTSD and CG.

An interesting finding was that PTSD symptoms remained stable from post-treatment to six 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. While the PTSD symptoms related to the death cause may be reduced, bereaved individuals are still confronted with the sense of loss, and their life to a situation in which their child or partner is no longer there.

Clinical implications
The brief, 8 session therapy with EMDR and CBT described in this paper seems recommendable as a treatment for to 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 for individuals
for which their loss happened long ago. Therapists only need a short training to give the therapy to patients. The finding that treatment orders were equally effective could imply that therapist and client do not have to start with EMDR or CBT per se, but can choose together which type of treatment they want to start with and feel most comfortable with. In our treatment sample, high rates of comorbidity were found; 88% \( (n = 75) \) of the participants met criteria of both CG and PTSD. When clinicians meet bereaved individuals with CG symptoms which seek treatment, it is advised to include measures of PTSD, since 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.

**Limitations**

This study had several limitations. First, we used self-report measures to assess CG and PTSD symptoms, and no interview-based assessment. Studies in which both methods were used showed that self-report measures can give an overestimation of PTSD rates (Engelhard et al., 2007). Also, 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. Therefore, we do not know if the treatment is effective for individuals with the formal disorder PTSD, which could be based on interview-based assessment such as the SCID-I. Second, our outcome measures were limited to CG and PTSD, and we did not included measures of depression or anxiety. Other studies reported patterns of comorbidity between CG and depression or anxiety in bereaved individuals following homicidal loss (McDevitt-Murphy, Neimeyer, Burke, Williams, & Lawson, 2012; Maercker & Znoj, 2010; Rheingold, Zinzow, Hawkins, Saunders, & Kilpatrick, 2012). While 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. Third, women were overrepresented in our sample (74%), limiting generalizations to the male population.

**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 interventions. Another future task for researchers and clinicians is to gain more insight in the efficacy of EMDR for CG. Our results suggests that completion of EMDR sessions (without CBT) was associated with a significant decrease in CG and PTSD scores. However, we did not compare the three sessions of EMDR to a control group: participants in the WC were only measured twice before the start of the treatment, but not at mid-, post-treatment and follow-up. To gain more insight in the efficacy of EMDR for CG, it is recommended to compare participants who follow EMDR with participants in a control group. A
major topic which also 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 which could foster adjustment and recovery (Solomon, & Shapiro, 1997). But the empirical research on mechanisms of change of EMDR are still largely unclear. Knowledge about the mechanism of change of EMDR is useful to decide whether EMDR could also be beneficial in bereavement related symptoms after non-traumatic loss. The role of traumatic memories is thought to be especially relevant following traumatic loss, while 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.

**Funding**

This research was funded by Victim Support Fund. The funding agency had no involvement in data collection, analysis and interpretation of the data, writings, and the decision to submit the article for publication.

**Acknowledgements**

We want to thank the therapists who carried out the treatment.
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