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Prevalence and Correlates of Self-Rated Posttraumatic Stress Disorder and Complicated Grief in a Community-Based Sample of Homicidally Bereaved Individuals

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Abstract

People confronted with homicidal loss have to cope with separation distress, related to their loss, and traumatic distress, associated with the circumstances surrounding the death. These reactions are related to complicated grief (CG) and posttraumatic stress disorder (PTSD). The psychological effects for people who have lost someone through homicide, in terms of PTSD and CG, are largely unclear. This cross-sectional study (a) examined the prevalence of self-rated PTSD and self-rated CG in a community-based sample of 312 spouses, family members, and friends of homicide victims and (b) aimed to identify socio-demographic, loss-related, and perpetrator-related correlates of PTSD and CG. Participants were recruited via support organizations for homicidally bereaved individuals in the Netherlands (i.e., *support group*), and by casemanagers of a governmental

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organization, which offers practical, non-psychological, support to bereaved families (i.e., *casemanager group*). Prevalence of self-rated PTSD was 30.9% (support group) and 37.5% (casemanager group), prevalence of CG was 82.7% (support group) and 80.6% (casemanager group). PTSD and CG severity scores varied as a function of the relationship with the victim; parents were at greater risk to develop emotional problems, compared with other relatives of the victim. Time since loss was negatively associated with PTSD and CG scores.

Keywords
posttraumatic stress disorder, complicated grief, homicide, murder, bereaved

Introduction

The death of a partner or close family member can lead to intense grief and distress. After homicide, people left behind face additional difficulties, associated with the violent and intentional nature of the act, involvement with the criminal justice system, media attention, and investigation by the police (Amick-McMullan, Kilpatrick, Veronen, & Smith, 1989; Kaltman & Bonanno, 2003; Parkes, 1993; Riches & Dawson, 1998; T. Rynearson, 1994; Sprang, 2001; Van Denderen, De Keijser, Kleen, & Boelen, 2015). People confronted with homicidal loss are assumed to deal with both separation distress (e.g., yearning) related to the loss and traumatic distress (e.g., intrusive images) associated with the circumstances surrounding their loss. The preceding reactions are related to complicated grief (CG) and posttraumatic stress disorder (PTSD), respectively (E. K. Rynearson & Sinnema, 1999). Persons with CG are assumed to be different from other bereaved individuals because they exhibit additional symptoms, such as intense yearning, searching, and permanent disbelief about the death of a loved one (Prigerson, Frank, et al., 1995). Although some symptoms of CG overlap with depression and symptoms of PTSD, re-experiencing, avoidance, and hyperarousal, the separation distress component is unique for persons with CG (Van Denderen et al., 2015). Furthermore, individuals with PTSD or CG can both experience anxiety, but the form is different: whereas PTSD complaints typically include threat-related anxiety, CG includes mainly separation anxiety (Lichtenhal, Cruess, & Prigerson, 2004). Although depressive and CG symptoms are frequently comorbid, some symptoms are different. Preoccupation with thoughts of the deceased, for example, is a symptom of CG but not of depression (Boelen, Van de Schoot, Van den Hout, De Keijser, & Van den Bout, 2010;

Prigerson, Maciejewski, et al., 1995; Van Denderen et al., 2015). In preceding years, standardized diagnostic criteria have been proposed for CG, although the condition is not included in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; American Psychiatric Association [APA], 2013). In the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; APA, 1994), bereavement was excluded as a mental illness, but was considered as a V-code, a condition which requires clinical attention when present with another illness.

Prevalence of PTSD and CG

Prevalence rates of PTSD after homicidal loss vary greatly between studies (Van Denderen et al., 2015). Among 333 young adults (aged 12-17) who lost a friend or family member due to homicide, the prevalence of current PTSD was 6%; having lost someone through homicide was further associated with an higher risk at depression (prevalence of past 6-month depression was 8%), drug use, and alcohol use (Rheingold, Zinzow, Hawkins, Saunders, & Kilpatrick, 2012). Among 268 close friends and family members of homicide victims from a national representative sample, 15% of homicidally bereaved met criteria for past 6-month PTSD (Zinzow, Rheingold, Byczkiewicz, Saunders, & Kilpatrick, 2011). Homicidally bereaved individuals were significantly more likely than other bereaved participants to report past year PTSD symptoms (odds ratio [OR] = 1.88) and were at greater risk of past year depression (OR = 1.64) and drug abuse/dependence (OR = 1.77; Zinzow, Rheingold, Hawkins, Saunders, & Kilpatrick, 2009). Among a national representative sample of 115 homicidally bereaved individuals, 16.6 years post loss, the lifetime prevalence of PTSD was 19.1%, whereas current PTSD was 5.2% (Amick-McMullan, Kilpatrick, & Resnick, 1991). In a small community-based sample of 17 parents of murdered children, Murphy et al. (1999) found 60% of the mothers and 40% of the fathers to meet PTSD criteria 4 month post loss. Because most studies have a cross-sectional nature, the effect of time on complaints could not be examined. In a longitudinal study among a community-based sample of 47 homicidally bereaved individuals, a significant decrease in symptom levels of depression and CG was observed over the 6-month study period, whereas PTSD symptom severity remained stable (Williams, Burke, McDevitt-Murphy, & Neimeyer, 2012).

Empirical, well-designed studies examining CG after violent deaths are currently lacking (E. K. Rynearson, Schut, & Stroebe, 2013). In a recent review on homicide-related psychopathology (Van Denderen et al., 2015), only one study (two references) was found concerning CG in homicidally bereaved individuals, among a small number of participants (Burke,

Neimeyer, & McDevitt-Murphy, 2010; McDevitt-Murphy, Neimeyer, Burke, Williams, & Lawson, 2012). The psychological consequences s of homicide for people left behind, in terms of PTSD and CG, are largely unclear. The present cross-sectional study was designed to (a) examine the prevalence of self-rated PTSD and CG in a community-based sample of 312 spouses, family members, and friends of homicide victims, and (b) identify socio-demographic, loss-related, and perpetrator-related correlates of PTSD and CG.

Hypotheses

Although little research has been performed on the emotional impact of homicidal loss, we had a number of expectations related to variables associated with the magnitude of this impact. Based on prior research, we expected females to experience higher levels of PTSD and CG than males (Hypothesis 1; Kersting, Brähler, Glaesmer, & Wagner, 2011; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). In addition, we expected symptom levels of PTSD and CG to be negatively related to time since loss (Hypothesis 2; Applebaum & Burns, 1991; Prigerson & Jacobs, 2001). It has long been assumed that, more than other losses, the death of a child is untimely and unjust and therefore requires a major reconstruction of identity and worldview. In particular, the loss of a child appears to be a significant predictor for CG (Hibberd, Elwood, & Galovski, 2010; Kersting et al., 2011; Newson, Boelen, Hek, Hofman, & Tiemeier, 2011). In a study among 150 homicidally bereaved individuals, varying in kinship relationship with the deceased, mothers scored significantly higher on PTSD than other relatives (Thompson, 1996). Accordingly, we expected higher PTSD and CG levels among homicidally bereaved individuals who lost a child compared with other bereaved individuals (Hypothesis 3). The relationship between the bereaved individual and the perpetrator has been studied infrequently. There is some literature suggesting that bereaved individuals experience a more difficult bereavement process when the perpetrator is an acquaintance of the bereaved and victim, or when the homicide is intra-familiar, for example, a child whose mother was killed by the father (Harris-Hendriks, Black, & Kaplan, 1993; Hatton, 2003). We expected that participants who knew the perpetrator would report higher CG scores than participants for whom the perpetrator was someone unknown (Hypothesis 4). To our knowledge, no prior studies investigated the relation between the bereaved individual and the perpetrator with regard to PTSD. Therefore, we had no prior expectations about this association. Little research has been performed regarding the influence of the juridical status of the perpetrator on bereavement and PTSD. In a study among 15 bereaved adults, bereaved individuals reported less psychological complaints in cases

where the perpetrator was arrested (E. K. Rynearson, 1984). Because, to our knowledge, no other studies examined the association between the juridical status of the perpetrator and PTSD and CG, we had no specific expectations about this issue.

Method

Participants and Procedure

A cross-sectional questionnaire study was conducted among homicidally bereaved individuals in the Netherlands. Participants were 312 spouses, family members (parents, siblings, children, aunts, uncles, and grandparents) and friends of homicide victims. To be included, participants had to be 18 years or older and understand the Dutch language. The 312 participants were related to 255 different homicide victims. Demographic characteristics of the sample are shown in Table 1.

Participants were recruited via three support organizations for homicidally bereaved individuals in the Netherlands (n = 188; hereafter called *support group*), and via casemanagers from the governmental organization *Victim Support The Netherlands*, which offers practical, non-psychological, support to homicidally bereaved families (n = 124; hereafter called *casemanager group*). In the support organizations, people have contact with other individuals who have lost a loved one through homicide, and who they did not know before the homicide. The organizations have a supportive, informal and non-caregiving, non-professional, and non-commercial character: They organize casual meetings in which individuals can share their experiences. Now and then, professionals (e.g., politicians, lawyers) are invited to inform members about juridical procedures. Victim Support is a governmental organization that offers practical and legal, non-psychological support to homicidally bereaved families since 2007. Their core aim is to inform these families about their rights in court, to help arrange the funeral, and to give advice in dealing with the media.

Data collection took place between June 2011 and March 2013. Cohabiting participants received paper questionnaires individually addressed. The material contained an information letter, the questionnaire packet, and a stamped return envelope. Questionnaires were sent minimally 6 months post loss, to allow time for normal grief. Questionnaires were numbered and kept separately from the addresses, which the first author had only access to. Casemanagers from Victim Support handed out the questionnaires to their clients. They knew which of their clients participated in the study, but had no access to questionnaire data from their clients. We handed out 504 questionnaires to Victim Support, resulting in a response rate of 24.6%. However, we have the indication that not all

Table 1. Demographic and Loss-Related Characteristics of the Homicide Sample (N = 312).

				Support Group (n = 188)		Casemanager Group (n = 124)	
Category	Subcategory	% or *M*	*SD*	% or *M*	*SD*	% or *M*	*SD*
Sex	Female	64.7%		61.7%		69.4%	
Age participant (years)		53.4	15.5	58.2	13.3	45.7	15.2
Time since loss (years)		6.9	6.5	9.4	6.4	3.1	4.9
Witnessed the murder		4.6%		4.9%		4.1%	
Experienced one loss		93.7%		92.9%		95%	
Convicted perpetrator		68.5%		78.4%		53.2%	
Participant is . . . of the victim	Spouse	6.9%		5.5%		9.1%	
	Parent	49.5%		65.9%		24.8%	
	Child	12.5%		5.5%		23.1%	
	Sibling	15.8%		10.4%		24%	
	Non-immediate family member	9.2%		7.7%		11.6%	
	Other (friend, acquaintance)	5.9%		4.9%		7.4%	
Perpetrator is . . . of the participant	(Ex)spouse	0.7%		0.6%		0.8%	
	Direct family member (i.e., parent, child, or sibling)	6.2%		3.5%		10.2%	
	Non-immediate family member	9.3%		6.4%		13.6%	
	Other (friend, acquaintance)	28.3%		29.1%		27.1%	
	Unknown	55.5%		60.5%		48.3%	

504 questionnaires were handed out by the casemanagers. Therefore, the response rate is minimally 24.6%, but is probably higher. We sent 333 questionnaires to members of support groups, resulting in a response rate of 56.5%.

The study was approved by the Ethical Commission Psychology board of the University of Groningen and consent was provided by the boards of the three support organizations and by Victim Support.

Measures

Socio-demographic and perpetrator-related variables. We collected information about the following demographic, loss-related, and perpetrator-related

variables: gender, time since loss (in years), the relationship between the participant and victim, the relationship between the participant and perpetrator, and juridical status of the perpetrator. The relationship between the participant and victim was divided into six categories: The participant was a (a) spouse, (b) parent, (c) child, (d) sibling, (e) non-immediate family member, or (f) friend/acquaintance of the victim. The relationship between the participant and perpetrator was divided into five categories: The perpetrator was an (a) (ex)spouse, (b) direct family member (i.e., parent, child, or sibling), (c) non-immediate family member, (d) other person known to the participant (i.e., colleague, friend, business partner, or acquaintance), or (e) someone unknown to the participant. For scoring the juridical punishment of the perpetrator, four categories were distinguished: (a) convicted, (b) the perpetrator was not found, (c) the legal process is not yet completed, (d) the perpetrator was discharged from punishment.

PTSD. Symptoms of current PTSD were measured with the PTSD Symptom Scale–Self-Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993; Dutch version Engelhard, Arntz, & Van den Hout, 2007). The PSS-SR is a 17-item self-report questionnaire to assess the symptoms of PTSD as defined in *DSM-IV*. The frequency of each symptom during the previous week was rated on a 4-point scale ranging from 0 = *not at all*, to 3 = *5 or more times per week/almost always*. PTSD prevalence was determined using the scoring rule that symptom scores were at least 2 (*2 to 4 times a week/half of the time*) for at least one re-experiencing symptom, three avoidance symptoms, and two hyperarousal symptoms (cf. Brewin, Andrews, & Rose, 2000). In this sample, Cronbach's alpha for all 17 items was .93. The alpha scores for the subscales were .87 (re-experiencing, for example, "In the past week, have you had bad dreams or nightmares about the traumatic event?"), .85 (avoidance, for example, "In the past week, how often did you feel distant or cutoff from people around you?"), and .83 (hyperarousal, for example, "In the past week, how often were you overly alert?"). The PSS-SR is not limited to victims of war or migration, and has frequently been used in samples of other kinds of traumas, also in studies in which the trauma happened long ago (see, for example, Mol et al., 2005). Therefore, we found it suitable to use in our sample of homicidally bereaved individuals.

Before answering the PSS-SR, participants were instructed to report which of the past events have bothered them the most in the last month. Half of the participants, 50%, reported the homicide as the event, 4% reported a non-homicide-related event (i.e., "sexual abuse in my childhood"), 8% a homicide-and a non-homicide-related event (i.e., "the murder of my mother and the divorce from my husband"), and 38% did not report any event. For the

analysis with PTSD as the outcome measure, we excluded the 4% participants who reported a non-homicide-related event. The participants who did not report any event were not excluded because the context of the research, psychopathology following homicide, was made clear throughout the questionnaire package and cover letter. We assume it to be reasonable that participants completed the PSS-SR while bearing the homicide in mind. As PTSD was not formally assessed and diagnosed by a structured interview, and the PSS-SR cannot diagnose PTSD, when PTSD is used throughout the article, *probable PTSD* can be read.

CG. Current CG severity was measured using the 19-item Inventory of Complicated Grief (ICG) developed by Prigerson, Maciejewski, et al. (1995; Dutch version; Boelen, Van den Bout, De Keijser, & Hoijtink, 2003). Respondents rated the frequency of symptoms in the preceding month on scales ranging from 0 = *never*, to 4 = *all the time*. Following Prigerson, Maciejewski, et al., a cutoff score of 25 at the ICG was used to differentiate between complicated (greater than 25) and non-complicated grievers (lower than or equal to 25). Among 97 bereaved elders, they found respondents with ICG scores >25 to be significantly more impaired in social, general, mental, and physical health functioning than those with ICG scores ≤25. In the current sample, Cronbach's alpha was .92. Examples of items are "I have the feeling that part of me has died with him or her" and "I feel tense, irritable or shocked since his or her death."

Statistical analyses. First, we examined whether participants from the so-termed support group and casemanager group differed in terms of time since loss and age, based on recruitment strategy. To this end, *t* tests were used. Depending on the outcome, participants were treated as one group or as two groups when reporting prevalence rates and analyzing the correlates of PTSD and CG severity.

The prevalence of PTSD and CG was assessed using the above-mentioned scoring rule and cutoff score. Proportion tests were used to test the differences in prevalence rate between both groups (with Z scores and p values reported).

When looking at the data, the assumption of independence of observations was not met: The 312 participants were related to 255 victims. To control for this dependency, we used multilevel analysis. The bereaved participants were nested in the victims. To test the differences in CG and PTSD scores between groups based on gender, relationship between the participant and victim, relationship between the participant and perpetrator, and juridical punishment, F tests were reported. Where appropriate, significant results were followed by

multiple-comparison *t* tests to test differences between pairs of groups, using Bonferroni correction (Hypotheses 1-4).

Missing data. Missing items were encountered in the ICG for 46 (14.7%) participants; 27 (8.7%) participants had one item missing and 5 (1.6%) participants were missing more than half of the items. For the PSS-SR, 53 (17.0%) participants had missing items; 24 (7.7%) participants had one item missing and 17 (5.4%) participants were missing more than half of the items. Participants with missing scores were compared with participants who completed all items. Both groups were compared for CG and PTSD on demographic and loss-related characteristics presented in Table 1. Only small and statistically non-significant differences were found. To retain as much of the item scores as possible, scale scores were calculated by averaging over the observed items when less than 50% of the scale items were missing. Because the two scales consist of a large number of items (19 items for the ICG and 17 items for the PSS-SR), calculating scale scores on half of the items was deemed to give reliable results. Participants with more than 50% of the scale items missing were excluded from the analyses.

Results

Preliminary Analysis

Using independent-sample *t* tests, it was found that participants from the support group and those from the casemanager group differed significantly in terms of time since loss: 3 ($SD = 4.9$) years for the casemanager group, compared with 9 ($SD = 6.4$) years for the support group; $t(299) = 9.88$, $p < .001$. Groups also differed significantly in age: 46 ($SD = 15.2$) years (casemanager group), compared with 58 ($SD = 13.3$) years (support group); $t(238) = 7.4$, $p < .001$. Holding age and time since loss constant across analyses (by including these variables as covariates) was deemed inappropriate because the overall estimated means on these variables are not representative for both subgroups. Therefore, we decided to treat both groups independently. We reported the prevalence rates of PTSD and CG for both groups together and separately, and performed all analyses on both groups separately.

We found the two variables age and time since loss to be strongly related to each other. Individuals who experienced the homicide 15 years ago, for example, were more likely to be older. In the analysis examining the correlates of PTSD and CG severity (see Tables 3 and 4), the presented mean scores, standard errors, and tests for differences were corrected for age and time since loss.

Table 2. Prevalence of Current CG and Current PTSD Among the Support Group and Casemanager Group and Tests of Difference in Prevalence Between the Support and Casemanager Group.

	Total Sample (%)	Support Group (%)	Casemanager Group (%)	Test
CG	81.9	82.7	80.6	$Z = 0.59$, $p = .55$
PTSD	33.7	30.9	37.5	$Z = 1.12$, $p = .26$

Note. CG = complicated grief; PTSD = posttraumatic stress disorder.

Prevalence of Current PTSD and CG

In Table 2, the prevalence rates for current PTSD and CG were presented for the support and casemanager groups, and proportion tests were reported (Z scores and p values). As can be seen in Table 2, prevalence rates of PTSD and CG did not differ significantly between both subgroups.

Correlates of CG Severity

In Table 3, socio-demographic correlates of CG were presented for both groups. Among the support group, CG scores were generally lower among participants for whom the murder took place longer ago, $b = -.40$, $p < .05$. CG severity differed as a function of relationship with the victim, $F(5, 172) = 4.96$, $p < .001$. Multiple-comparison t tests showed that parents and spouses reported significantly higher CG scores than non-immediate family members. Gender, the juridical status of the perpetrator, and the relationship between the participant and perpetrator did not correlate significantly with CG severity in the support group.

For the casemanager group, female participants reported significantly higher CG scores than male participants, $F(1, 103) = 9.53$, $p < .01$. In terms of Cohen's d effect size, the difference in CG scores between females ($M = 40.25$, $SD = 13.51$) and males ($M = 32.38$, $SD = 14.52$) was moderate ($d = 0.56$).[1] Among the casemanager group, scores were also lower when the homicide happened longer ago, $b = -.66$, $p < .01$. CG severity also differed as a function of relationship with the victim, $F(5, 115) = 5.82$, $p < .001$; parents reported significantly higher CG scores than children, siblings, non-immediate family members, and friends/acquaintances. CG severity was associated with the juridical status of the perpetrator, $F(3, 100) = 3.20$, $p < .05$; participants for whom the legal process was still ongoing reported significantly higher CG scores compared with cases in which the perpetrator was

Table 3. Socio Demographic and Loss-Related Correlates of CG.

		Complicated Grief; Support Group (n = 188)				Complicated Grief; Casemanager Group (n = 121)			
	Subcategory	n	M	SE	Test for Difference[a]	n	M	SE	Test for Difference[a]
Sex (n total)	Male	69	38.23	1.65		35	31.98	2.21	
	Female	111	41.29	1.31	$F(1, 116) = 2.27$, $p = .14$	86	39.86	1.44	$F(1, 103) = 9.53$, $p < .01$**
Time since loss					$b = -.40$, $p < .05$*				$b = -.66$, $p < .01$**
Perpetrator	1. Convicted	128	39.85	1.21		57	35.32	1.78	
	2. Is not found by the police	14	34.80	3.65		7	33.79	4.78	
	3. The legal process is still ongoing	12	45.69	4.12		38	43.74	2.23	1 (+)
	4. Is discharged from punishment	6	44.31	5.53	$F(3, 140) = 1.48$, $p = .22$	4	36.78	6.30	$F(3, 100) = 3.20$, $p < .05$*
Participant is . . . of the victim	1. Spouse	9	41.44	4.33	5 (+)	11	37.87	3.70	
	2. Parent	115	42.24	1.37	5 (+)	29	47.37	2.42	3, 4, 5, 6 (+)
	3. Child	10	41.11	4.84		26	33.42	2.57	
	4. Sibling	18	37.11	3.66		29	37.70	2.29	
	5. Non-immediate family member	14	35.89	4.41		14	31.16	3.35	
	6. "Others" (friend/colleague/acquaintance)	9			$F(5, 172) = 4.96$, $p < .001$***	9	25.02	4.44	$F(5, 115) = 5.82$, $p < .001$***
Perpetrator is . . . of the participant	1. (Ex)spouse	1	48.85	13.69		1	40.43	13.57	
	2. Direct family member (parent, child, or sibling)	6	35.49	5.53		11	34.51	4.20	
	3. Non-immediate family member	11	48.53	4.17		16	36.32	3.48	
	4. Other (friend, colleague, or acquaintance)	49	40.94	2.00		32	34.71	2.42	
	5. Unknown	99	38.82	1.42	$F(4, 160) = 1.53$, $p = .20$	55	40.21	1.95	$F(4, 111) = .94$, $p = .44$

Note. The presented mean scores, *SE*s, and tests for differences are corrected for age and time since loss. CG = complicated grief.

[a]In the column "Test for Difference," the results of the F test are reported. Then, we reported the results of the pairwise tests by reporting the number of the group(s) of which the concerning group significantly differed. For example, complicated grief scores differed significantly in the support group according to the relationship between the participant and the victim. When looking at the pairwise tests, spouses and parents reported significantly higher complicated grief scores than non-immediate family members (Group 5). The (+) sign indicates that the concerning group (spouses, parents) scored higher than the other group (non-immediate family members).

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

Table 4. Socio Demographic and Loss-Related Correlates of PTSD.

		PTSD; Support Group (n = 163)				PTSD; Casemanager Group (n = 114)			
	Subcategory	n	M	SE	Test for Difference[a]	n	M	SE	Test for Difference
Sex (N total)	Male	65	15.77	1.39		33	16.33	2.10	
	Female	98	20.74	1.18	$F(1, 78) = 10.06$, $p < .01$**	81	22.89	1.35	$F(1, 110) = 7.02$, $p < .01$**
Time since loss					$b = -.55$, $p < .05$*				$b = -.80$, $p < .01$**
Perpetrator	1. Convicted	118	17.92	1.12		51	18.70	1.70	
	2. Is not found by the police	9	17.13	3.91		7	17.13	4.45	
	3. The legal process is still ongoing	12	23.16	3.48		37	26.05	2.06	1 (+)
	4. Is discharged from punishment	5	27.09	5.00	$F(3, 137) = 1.55$, $p = .20$	4	22.68	5.88	$F(3, 95) = 2.80$, $p < .05$*
Participant is . . . of the victim	1. Spouse	8	21.76	4.03		11	26.93	3.41	6 (+)
	2. Parent	105	19.45	1.32	5 (+)	28	28.05	2.29	3, 6 (+)
	3. Child	10	19.28	4.35		25	16.56	2.41	
	4. Sibling	15	17.23	3.60		28	18.77	2.15	
	5. Non-immediate family member	12	7.53	3.30		12	20.02	3.28	
	6. Friend/colleague/acquaintance	8	20.82	4.01	$F(5, 145) = 2.65$, $p < .05$*	8	9.24	4.21	$F(5, 111) = 4.52$, $p < .01$**
Perpetrator is . . . of the participant	1. (Ex)spouse	1	20.50	11.98		1	7.02	12.14	
	2. Direct family member (parent, child, or sibling)	5	10.86	5.06		11	17.87	3.75	
	3. Non-immediate family member	11	24.15	3.67		15	19.89	3.19	
	4. Other (friend, colleague, or acquaintance)	48	20.38	1.77		32	19.42	2.17	
	5. Unknown	86	17.60	1.35	$F(4, 143) = 1.61$, $p = .17$	51	22.79	1.77	$F(4, 106) = 0.83$, $p = .51$

Note. The presented mean scores, *SE*s, and tests for differences are corrected for age and time since loss. PTSD = posttraumatic stress disorder.
[a]In the column "Test for Difference," the results of the F test are reported. Then, we reported the results of the pairwise tests by reporting the number of the group(s) of which the concerning group significantly differed.
*p <. 05. **p < .01. ***p < .001.

convicted. CG severity did not vary as a function of the relationship between the participant and perpetrator in the casemanager group.

Correlates of PTSD Severity

In Table 4, socio-demographic correlates of PTSD are presented. In the support group, females reported significantly higher PTSD scores than males, $F(1, 78) = 10.06$, $p < .01$. The difference in PTSD scores between females ($M = 19.65$, $SD = 12.43$) and males ($M = 14.79$, $SD = 12.21$) was small ($d = 0.39$). Similar to CG severity, PTSD severity was inversely related to time since loss, $b = -.55$, $p < .05$. PTSD severity varied as a function of the relationship with the victim, $F(5, 145) = 2.65$, $p < .05$; parents reported significantly higher PTSD scores than non-immediate family members. As with CG severity in the support group, juridical status of the perpetrator and the relationship between participant and perpetrator did not correlate significantly with PTSD severity.

In the casemanager group, females also reported significantly higher PTSD scores compared to males, $F(1, 110) = 7.02$, $p < .01$. The difference in PTSD scores between females ($M = 23.16$, $SD = 12.44$) and males ($M = 15.56$, $SD = 13.33$) was moderate ($d = 0.58$). PTSD was significantly negatively associated with time since loss, $b = -.80$, $p < .01$. PTSD severity in the casemanager group was also associated with the relationship with the victim, $F(5, 111) = 4.52$, $p < .01$; parents reported significantly higher PTSD scores than children, and friends/acquaintances. Spouses also reported significantly higher scores than friends/acquaintances. As with CG severity in the casemanager group, PTSD severity differed according to the juridical status of the perpetrator, $F(3, 95) = 2.80$, $p < .05$; participants for whom the legal process was still ongoing reported significantly higher PTSD scores compared with cases in which the perpetrator was convicted. The relationship between the participant and perpetrator did not correlate significantly with PTSD severity.

Discussion

Significant proportions of the participants screened positive for PTSD and CG; the prevalence of PTSD was 30.9% (support group) and 37.5% (casemanager group); for CG, the prevalence was 82.7% (support group) and 80.6% (casemanager group). Females reported significantly higher PTSD (in both groups) and CG scores (only in the casemanager group) than males, so the first hypothesis was partly confirmed. In accordance with Hypothesis 2, PTSD and CG levels were lower for participants for whom the loss occurred

longer ago. When looking at the different categories of the relationship with the victim, results differed slightly between the support group and casemanager group. In accordance with Hypothesis 3, parents reported significantly higher levels of PTSD and CG than most other relationships with the victim. Spouses reported higher CG scores than non-immediate family members (support group) and higher PTSD scores than friends/acquaintances (casemanager group). Relating to CG, this is in accordance with results found in previous studies, in which individuals who lost a child or spouse were more likely to experience CG (Newson et al., 2011). Inconsistent with our fourth hypothesis, PTSD and CG levels did not differ according to whether the perpetrator was a known versus unknown, or intra-or extra-familiar individual of the participant. This contrasts with prior evidence that intra-familiar homicides, in which the bereaved is both an immediate family member of the victim and perpetrator, can be especially difficult to process (Harris-Hendriks et al., 1993; E. K. Rynearson, 1984). Interestingly, the conviction of the perpetrator influenced CG and PTSD scores; when the legal process was still ongoing, participants reported higher scores than when the perpetrator was convicted. The fact that this finding was only reported in the casemanager group could be related to time since loss. For the casemanager group, time since loss was on average 3 years. In the first year following loss, it is more likely that the legal process is still ongoing, than when the loss happened longer ago. In the support group, for only 12 participants, the legal process was still ongoing, which is probably too small to find an association between juridical status and symptom severity.

Differences Between the Support Group and Casemanager Group

Prevalence rates found in this study are higher than those found in other studies that assessed PTSD and CG in homicidally bereaved samples: 18.5% (1.8 years post loss) and 19.1% (16.6 years post loss) for PTSD (Amick-McMullan et al., 1991; McDevitt-Murphy et al., 2012), and 54.5% (1.8 years post loss; McDevitt-Murphy et al., 2012) for CG. The average time since the homicide seems to offer no explanation for the various prevalence rates, because the prevalence rates are not consequently lower in studies where time since loss is extended. Interestingly, the prevalence rates in this study did not differ significantly between the support and casemanager groups. It seems reasonable to expect significantly lower CG and PTSD rates in the support group (9 years post loss) compared with the casemanager group (3 years), given the lower symptomology levels in participants for whom the loss happened longer ago. It seems that the effect of time was neutralized by membership of a

support group. It is not clear whether the high prevalence rates in the support group can be seen as a cause or an effect of membership. In other words, are initially high levels of symptoms a reason for individuals to join support groups, or does membership have a sustaining effect on symptomatology? In the literature, studies were found supporting both lines of reasoning. Murphy, Johnson, Lohan, and Tapper (2002) found that among parents whose child was murdered, support group participation was positively and significantly related to both mental distress and PTSD (i.e., the higher one's distress, the more likely participation in a support group). Asaro and Clements (2005) found that bereaved families with PTSD were more likely to attend a support group than those without PTSD, controlled for time since loss. However, participation in support groups can lead to the persistence of symptoms, instead of a reduction. Participants could feel worse after attending a support group, because they are confronted with their own feelings connected to their loss and with feelings from other bereaved individuals in the group (Asaro & Clements, 2005). Subsequently, participation in support groups can lead to a stronger identification with the role of secondary victim (victimization), which in turn can act as a positive reinforcement to psychopathological behavior or persistence of symptoms. In a recent study, support group participation was also associated with an increased risk of CG among bereaved individuals whose loved one died by suicide (De Groot & Knollen, 2013).

Limitations

This study has several limitations. First, prevalence rates of PTSD and CG were based on data from self-report questionnaires. As PTSD was not formally assessed and diagnosed by a structured clinical interview, we could only speak of *probable PTSD* or *PTSD-related complaints*. Previous research in which both methods were used showed that self-report measures can give an overestimation of PTSD rates (Engelhard, Van den Hout, et al., 2007). Therefore, the actual current PTSD rate in this sample could be lower. Second, the instruction we used in the PSS-SR could have been more precise. As reported in the "Method" section, 38% of the participants did not report a specific traumatic event before answering the PSS-SR, so we cannot conclude whether they responded to the questions with the homicide in mind or some other event. However, because the topic of the research, psychopathology following homicide, was made clear throughout the questionnaire package and cover letter, we assume that participants bore the homicide in mind. To prevent the participants from reporting or thinking about other events, researchers should specify the instructions in the questionnaire. Third, we used a cross-sectional design that did not allow to draw conclusions about the

direction of causality, and temporal processes; longitudinal studies are needed to examine the prospective linkage between variables that we assessed (including membership of support organizations) and the development of distress over time. Fourth, we used a community-based sample, which is not representative of the population of homicidally bereaved individuals. Next to the two subgroups of bereaved individuals described in this article, a third group likely exists: homicidally bereaved individuals who are not a member of a support group and did not receive help from Victim Support. This third group could be the largest group. We contacted the police for names of individuals of this group of individuals, but we could not gain access to this group because of privacy reasons. Therefore, prevalence rates assessed in this study only relate to the first two subpopulations of bereaved individuals, and not to the general population of homicidally bereaved individuals. We do not know to what extent the symptoms of either of these samples can be compared with those of non-assessed groups. The fact that our prevalence rates were higher than those in other studies could be due to a selection bias. The response rate, especially among the casemanager group, was somewhat low. Individuals with more severe psychopathology could be more willing to participate in the study. Because of the recruitment style and response rates, the generalization of the current findings to non-assessed groups should be done with caution. We have a reason to assume that our support group sample is however representative of the population of members of support groups. Although we have no information regarding the non-responders, the board of the support groups gave us information about characteristics of all their members (e.g., age = on average 53 years, time since loss = 8.6 years, and proportion females = 60%). The demographic characteristics of our sample are 58.2 years (age), 9.4 years (time since loss), and 61.7% (proportion females) and vary only slightly. From the casemanager group, we did not gain access to the demographic information of its total sample of member non-responders or other information regarding the generalizability of our sample.

To conclude, this is one of the first studies to examine the prevalence of homicide-related psychopathology among such a large and diverse sample of bereaved individuals. To the best of our knowledge, this is the first study that assessed the relationship between the bereaved individual and the perpetrator, and the influence of juridical punishment in such detail among homicidally bereaved individuals. Time since loss and the relationship with the victim were the most important correlates of PTSD and CG severity. This finding was consequently reported among both groups, for PTSD as well as CG. The present findings suggest that homicidally bereaved parents and spouses have a greater risk to develop emotional problems, compared with other relatives of the deceased. This indicates that clinical interventions to reduce PTSD and

CG should best be focused on these groups. Future research should be conducted to assess prevalence rates among other samples of homicidally bereaved individuals, including those individuals who do not receive and actively seek out support, and to investigate the underlying mechanisms of individual differences in psychopathology following homicidal loss.

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Note

1. When calculating Cohen's *d*, the standard deviation was used instead of the standard error. To obtain the mean scores and standard deviations, scores were not corrected for the covariates age and time since loss. Mean scores reported here differ therefore slightly from the mean scores reported in Tables 3 and 4.

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