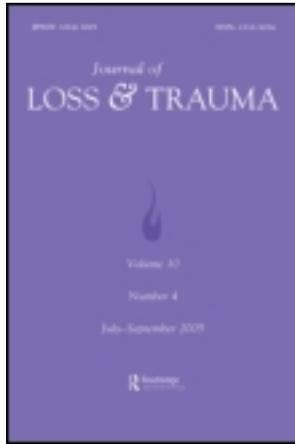


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Responses to Loss and Health Functioning Among Homicidally Bereaved African Americans

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This investigation of homicidally bereaved African Americans (N = 47) aimed to describe changes in levels of posttraumatic stress disorder (PTSD), depression and complicated grief (CG), and physical and mental health functioning over a 6-month interval. Results showed a significant decrease in depressive and CG symptoms over time, but no significant changes in PTSD symptoms or health functioning. We also found no significant, synchronous relations between any form of bereavement distress and physical health. Depression was related to functional mental health such that a temporal increase in depression was associated with a decrease in mental health functioning. Research and clinical implications are discussed.

Although grief is a nearly universal response to the loss of a loved one, research also shows that it manifests itself in a variety of ways. Specifically, when griever find the death of a loved one particularly difficult to bear, bereavement distress can surface in the form of depressive or posttraumatic stress disorder (PTSD) symptomatology (Bonanno & Mancini, 2006) or in the form of complicated grief (CG; Prigerson et al., 1995; Shear et al., 2011). Complicated grief, also called prolonged grief disorder (PGD; Boelen &

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Prigerson, 2007; Neimeyer, 2008), is a protracted, incapacitating, and sometimes life-threatening response to the loss of a loved one.

Bonanno and Kaltman (2001) reported that approximately 45%–50% of individuals grieving normative losses (i.e., as a result of natural, nonviolent causes) respond resiliently to loss, with significant grief symptomatology diminishing fairly rapidly. For other bereaved individuals experiencing acute grief symptoms, the journey through bereavement often takes a year or two (Bonanno & Mancini, 2006). However, Holland and Neimeyer (2010) found that bereavement distress can persist at elevated levels for years with little decrement. Currier, Holland, Coleman, and Neimeyer (2007) found this to be especially true when losses are resultant of violent means (i.e., suicide, homicide, or fatal accident), which can subsequently elicit difficulties in making sense of the loss; this, in turn, has been linked with poor adaptation (Currier, Holland, & Neimeyer, 2006). Although further investigation is warranted, violent death has been implicated as a potential risk factor for CG (Currier et al., 2007; Gamino, Sewell, & Easterling, 2000; Keesee, Currier, & Neimeyer, 2008).

A large body of evidence also links traumatic stress exposure with poor self-reported health functioning (e.g., Green & Kimerling, 2004), especially among traumatically bereaved individuals (e.g., de Groot, de Keijser, & Neeleman, 2006). Health functioning is typically conceptualized as some level of impairment in role performance in areas such as marital, family, social, or occupational functioning due to impaired physical or mental health (see Schnurr, Lunney, Bovin, & Marx, 2009, for a review). In a review of extant literature on grief experiences, Bonanno and Kaltman (2001) highlighted that bereavement is associated with decrements across several domains of health functioning including perceived health, social functioning, and occupational and family role performance.

Within the broader literature on the health consequences of traumatic stress exposure, most of the research to date has focused on the role of PTSD in explaining the link between trauma and health functioning (e.g., McDevitt-Murphy et al., 2010). However, for individuals in the wake of traumatic loss, a number of other trauma-related sequelae likely contribute to impaired health functioning. For instance, individuals bereaved by sudden and traumatic loss are at increased risk for poor psychosocial outcomes including depression (Kaltman & Bonanno, 2003) and CG (Currier et al., 2006), both of which have been independently linked to poorer health outcomes (Silverman et al., 2000).

BEREAVEMENT DISTRESS AND HEALTH FUNCTIONING

Recent research indicates that major depressive disorder (MDD) is common in the wake of loss (e.g., Bonanno & Mancini, 2006) and can include

symptoms such as suicidal ideation, psychomotor retardation, or extreme feelings of worthlessness or guilt (Bonanno & Kaltman, 2001). Consequently, depression is one of the most frequently measured bereavement outcomes in studies of grievers. Yet, researchers such as Bonanno and Mancini (2006) and Prigerson et al. (1995) have found that PTSD and CG are also common forms of bereavement distress. PTSD symptoms following bereavement can include reexperiencing memories of the deceased's death, avoidance of reminders about the deceased's death, and hyperarousal (e.g., Lichtenthal, Cruess, & Prigerson, 2004). Distinct from both depression and PTSD, CG is characterized by distress surrounding *separation* from the deceased and includes symptoms such as yearning for and preoccupation with thoughts about the deceased (e.g., Lichtenthal et al., 2004; Prigerson et al., 1995). Thus, PTSD, depression, and CG are specific psychological syndromes that should be explored in inclusive examinations of health functioning, including mental health functioning, which involves overall psychological distress and associated reductions in quality of life.

In terms of mental health functioning among bereaved individuals, depression and CG have been associated with higher levels of suicidality, hostility, insomnia, early mortality, and changes in health risk behaviors such as smoking (Gilewski, Farberow, Gallagher, & Thompson, 1991; Hardison, Neimeyer, & Lichstein, 2005; Latham & Prigerson, 2004; Prigerson et al., 1997; Stroebe, Schut, & Stroebe, 2007). Studies of parents bereaved by the violent death of their children suggest that more severe bereavement-related PTSD symptoms may affect physical health functioning long after the traumatic event (Murphy et al., 1999), and PTSD-related hyperarousal in particular is associated with higher levels of physical symptoms and poorer health perceptions (Kimerling, Clum, & Wolfe, 2000). Given that many bereaved individuals likely experience elevated symptoms across two or more of these distress dimensions (i.e., PTSD, depression, and CG), an emerging literature has attempted to explore the relative contributions of bereavement outcomes to mental and physical health functioning.

Using the Medical Outcomes Study Short Form-36 Health Survey (SF-36; Ware & Sherbourne, 1992), a widely used measure of health functioning, Silverman et al. (2000) reported that after controlling for symptoms of all three syndromes, PTSD, depression, and CG were each uniquely associated with different aspects of mental and physical health functioning in a sample of 67 spousally bereaved individuals. Specifically, both depression and CG were uniquely associated with vitality, while CG was found to be uniquely predictive of social functioning and overall mental health (conceptualized as level of psychological distress and well-being). PTSD symptoms, on the other hand, were uniquely predictive of pain, role limitations, and general health functioning. Boelen and Prigerson (2007) reported a similar pattern of findings in their mixed bereavement sample of 96 individuals assessed within 6 months to 1 year post-loss (Time 1 [T1]), where CG severity at

T1 was independently associated with worse mental health at Time 2 (T2; 12–18 months post-loss) and at Time 3 (T3; 21–27 months post-loss), while anxiety symptoms were associated with worse perceived general health at T2.

In contrast to Silverman et al.'s findings, Boelen and Prigerson (2007) found that depressive symptoms were only marginally associated with health functioning after accounting for CG and anxiety. In a sample of 447 survivors of the September 11 terrorist attacks, Bonanno et al. (2007) found, after accounting for symptoms of PTSD, that depressive and CG symptoms were both uniquely associated with global health functioning. Together, these findings suggest that bereavement outcomes may differentially affect physical and mental health functioning, but little research has examined temporal relations between changes in bereavement outcomes and health status.

THE CURRENT STUDY

Homicide is second to accidents as a leading cause of death in the United States for adolescents and young adults (Heron et al., 2009). Research also indicates that African Americans experience homicide much more frequently than do Caucasians (Bureau of Justice Statistics, 2007), and, even following nonviolent loss, they report elevated grief symptoms in comparison to their Caucasian counterparts (Goldsmith, Morrison, Vanderwerker, & Prigerson, 2008). Homicidally bereaved individuals are at risk for PTSD, depression, and CG (Currier et al., 2007; Rynearson & McCreery, 1993), and these syndromes have shown a strong link to serious mental and physical impairments in bereaved samples (Gilewski et al., 1991; Hardison et al., 2005; Latham & Prigerson, 2004; Murphy et al., 1999; Prigerson et al., 1997). These prior findings highlight the need to understand the ways in which poor adaptation to loss affects the health of survivors in the wake of homicide. It is particularly important to investigate these factors in a sample of African Americans, a group that is disproportionately affected by homicide.

The overarching aim of this study was to explore the temporal relations between adverse responses to loss and poor mental and physical health outcomes in a sample of homicidally bereaved African Americans. Consequently, our first aim was to examine changes in levels of bereavement distress and physical and mental health between T1 and T2. In their mixed sample of bereaved individuals, Boelen and Prigerson (2007) showed that symptoms of depression, CG, and anxiety declined over time. Thus, we hypothesized that scores on all symptom measures in our sample would decline from T1 to T2. T1 findings for PTSD, depression, and CG have been reported in a prior investigation of the current sample (Burke, Neimeyer, & McDevitt-Murphy, 2010). Our second aim was to examine temporal relations between changes in bereavement outcomes and physical and mental health

functioning scores. Because prior studies have found associations between PTSD and anxiety symptoms and different aspects of physical health functioning, including role limitations due to physical health, pain, and perceived general health (e.g., Boelen & Prigerson, 2007; Silverman et al., 2000), we anticipated that temporal changes in PTSD symptoms would be more strongly related to changes in physical health functioning. The same studies also generally reported significant associations between symptoms of depression and CG and various aspects of mental health functioning, including vitality, social functioning, and overall mental health. Accordingly, we expected that changes in depression and CG would be uniquely related to changes in various aspects of mental health functioning in our sample.

METHOD

Participants

All homicidally bereaved individuals who were at least 18 years or older at the time of enrollment were eligible for participation in the current study. Participants were 47 African American homicidally bereaved adults recruited into the study through Victims to Victory (VTV), a faith-based organization that collaborates with local law enforcement agencies to offer crisis counseling, victims' advocacy, and other services to survivors of homicide victims in Memphis. Although VTV conducts a homicide support group, it is not specifically a mental health agency and offers its services regardless of the survivor's faith tradition or lack of one. While some homicidally bereaved individuals elect to receive services immediately after the homicide, others may not seek services from VTV for quite some time after the loss, and some people never seek services from VTV. Several recruitment strategies were employed, including phone contacts, mailings, word of mouth, and distribution of brochures at VTV's biweekly support group meetings. Finally, some individuals joined as a result of hearing about our study from previous participants, all of whom received study brochures at the end of the first session. The exact number of people who heard about our study is unclear because of the multiple methods used to promote the project, including word of mouth. Of the 137 people with whom our staff had phone conversations, 15 declined participation. Reasons for not joining included the following: not ready to talk about the loss ($n=5$), too busy ($n=5$), not interested in research ($n=1$), too sick to participate ($n=1$), too close to the holidays ($n=1$), or did not speak English ($n=1$). One person did not give a reason. Many others expressed interest but did not schedule assessment appointments or repeatedly missed or canceled appointments.

Descriptively, participants were largely female (89.4%; $n=42$) with a mean age of 49.66 years ($SD=11.92$). In terms of kinship to the homicide victim, the majority of participants were parents or stepparents of the

homicide victim (63.8%; $n = 30$). The remaining participants were spouses (10.6%; $n = 5$), siblings (8.5%; $n = 4$), or other relations including extended family (17.0%; $n = 8$). Participants varied in terms of education levels, with most participants having completed high school (25.5%; $n = 12$), attended some college (38.3%; $n = 18$), or graduated from college (19.1%; $n = 9$). A smaller percentage of participants had less than a high school education (10.6%; $n = 5$) or education beyond college (6.4%; $n = 3$). Seventeen participants (36.2%) had annual household incomes less than \$20,000 per year, 22 participants (46.8%) had incomes between \$20,000 and \$50,000 per year, and 8 participants (17.0%) had incomes greater than \$50,000 per year. Information regarding whether the participant witnessed the death scene (i.e., found her or his loved one after the homicide) was available for 43 of the 47 participants. Of these 43 participants, 13 (30.2%) reported finding their loved one after the homicide. The homicide victims associated with the study completers were all African American (100%; $n = 39$), mostly male (61.5%; $n = 24$), and ranged in age from 2 to 55 years ($M = 27.08$, $SD = 10.77$).

Procedure

Following approval from the university's Institutional Review Board, participants met with a trained graduate student for the first assessment (T1), which consisted of signing an informed consent form, participating in a brief audiotaped, semistructured, open-ended interview, and completing a number of paper-and-pencil measures. The interviews were incorporated simply to build rapport through the use of two questions: (a) "I did not have the pleasure of knowing [loved one], could you tell me a little about [him/her]?" (to allow the bereaved to reflect on the life of the deceased loved one) and (b) "How have you been doing since [his/her] death?" (to show concern about the well-being of the bereaved since the loss).

A second assessment session was held approximately 6 months later (T2) during which participants completed a series of structured clinical interviews with a trained graduate student along with the same paper-and-pencil measures completed at T1. The total length of the sessions was approximately 1–3 hours at T1 and 2–4 hours at T2. Participants received \$25 for completing each assessment. Participants were given the choice of completing assessments at the research group's offices at the university or at VTV offices.

Measures

POSTTRAUMATIC STRESS DISORDER

The PTSD Checklist-Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item self-report measure corresponding directly to the

symptom criteria for PTSD as defined in the DSM-IV-TR (*Diagnostic and Statistical Manual of Mental Disorders*, text revision; American Psychiatric Association, 2000). Respondents were asked to endorse how much they have been bothered by a particular symptom, such as being “super-alert” or watchful or on guard, using a 5-point Likert-type scale (1 = not at all, 5 = extremely.) Items assessed reexperiencing the trauma, emotional numbing, avoidance of trauma-related reminders, and heightened arousal and were summed to derive a total symptom severity score, with higher scores representing greater levels of PTSD symptoms. Total scores can range from 17 to 85, with a score of 50 typically used as a conservative cut-score to identify positive PTSD screens, although some studies have recommended cut-scores as low as 31 to screen for PTSD (Yeager, Magruder, Knapp, Nicholas, & Freuh, 2007). The PCL-C has shown good psychometric properties in samples of community violence victims (Ramchand, Marshall, Schell, & Jaycox, 2008) and survivors of traumatic loss (Bonanno et al., 2007). In this sample, the PCL-C showed good internal consistency (T1: $\alpha = .93$; T2: $\alpha = .96$).

DEPRESSION

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a widely used measure of depressive symptoms consisting of 21 self-report items scored on a 4-point Likert-type scale; items include “I have lost most of my interest in other people or things” and “I feel sad much of the time.” Items were summed to derive a total symptom severity score, with higher scores suggestive of more severe depressive symptoms. Total scores can range from 0 to 63, where a score of 14 or higher is suggestive of at least mild depression. The BDI-II has shown good psychometric properties in studies of traumatized adults (Scarpa, Hurley, Shumate, & Hayden, 2006). Likewise, the BDI-II demonstrated good internal consistency in this sample (T1: $\alpha = .93$; T2: $\alpha = .95$).

COMPLICATED GRIEF

The Inventory of Complicated Grief-Revised (ICG-R; Prigerson & Jacobs, 2001) is a 34-item, self-report measure of grief symptom severity where higher scores indicate increased maladaptation to loss. Respondents rate their level of symptomatology using 5-point Likert-type response options (1 = almost never or none, and 5 = always or an overwhelming sense) in response to items such as “I feel that I have trouble accepting the death” or “Ever since [the respondent’s loved one] died I feel like I have lost the ability to care about other people or I feel distant from people I care about.” Scores can be summed to derive a total score such that higher scores are suggestive of worse CG symptoms. Total scores can range from 30 to 150.

Using a Dutch version of the ICG-R, Boelen, van den Bout, de Keijser, and Hoijtink (2003) proposed a cut-score of 90 to identify individuals screening positive for CG. The ICG-R has shown high internal consistency in samples of bereaved parents (Keesee et al., 2008) and bereaved college students (Laurie & Neimeyer, 2008). Likewise, internal consistency for the ICG-R in the current sample was high (T1, $\alpha = .95$; T2, $\alpha = .96$).

HEALTH FUNCTIONING

The Medical Outcomes Study Short Form-36 Health Survey (SF-36; Ware & Sherbourne, 1992) is a 36-item, self-report measure, with Likert-type response options, assessing eight domains of health functioning related to physical and emotional health. Scores from these eight subscales can be used to compute two composite scores: a Physical Component Summary (PCS), represented by a composite score where the general health, pain, physical functioning, vitality, and physical role limitations scales contribute most strongly to the component, and a Mental Component Summary (MCS), represented by a composite score where the social functioning, vitality, mental health, and emotional role limitations subscales contribute most strongly to the component (Taft, Karlsson, & Sullivan, 2001). Component summary scores are converted to T scores ($M = 50$, $SD = 10$), with higher scores indicative of better functioning. Likewise, scores on each of the eight subscales range from 0 to 100, where higher scores are indicative of better functioning. Example questions include “How much physical pain have you had in the past four weeks?” and “Have you felt downhearted and blue [during the past four weeks]?” Scales from the SF-36 have shown good internal consistency in samples of bereaved adults (Benight, Flores, & Tashiro, 2001), and, in our sample, each of the eight subscales demonstrated good internal consistency at both time points (Cronbach’s alphas ranged from .79 to .93).

Data Analysis

Prior to conducting analyses, data screening procedures were used to explore potential violations of the assumption of univariate and multivariate normality, detect possible outliers, and correct any violations of these conditions (Tabachnick & Fidell, 2007). Changes in levels of bereavement distress and physical and mental health between T1 and T2 were assessed using paired samples *t* tests. The direction and strength of relations between the bereavement distress measures (PCL-C, BDI-II, and ICG-R) and the health functioning measures (SF-36 MCS and PCS scores) at T1 and T2 were assessed using a series of Pearson correlation statistics. To examine the temporal relations between changes in bereavement outcomes and physical and mental health functioning scores, mixed-model, repeated-measures analyses were conducted where bereavement outcomes assessed at each time point

were treated as time-dependent covariates. Age and gender were also entered as covariates. Health outcomes were entered as dependent variables in two separate analyses. For each analysis, subjects were nested by their association with the homicide victim, because some subjects were associated with the same victim. Time of assessment (i.e., T1 and T2) was entered as a fixed factor in each analysis.

To explore more nuanced aspects of the relations between bereavement outcomes and health functioning, we also conducted a series of mixed-model, repeated-measures analyses using each of the eight domains on the SF-36 as dependent variables. Bereavement outcomes, age, and gender were all entered as covariates in each model. Although 54 grievors participated in the T1 assessment, only data from study completers (i.e., participants of both T1 and T2 assessments) were included in these analyses ($N = 47$). Study completers were compared to non-completers on each of the T1 bereavement and health outcomes, along with several demographic variables, and the two groups did not differ on any variable. However, there was a marginally significant trend such that the index homicide tended to be more recent for completers ($M = 20.09$ months, $SD = 14.34$) than non-completers ($M = 31.61$ months, $SD = 13.97$), $t(52) = 1.99$, $p < .10$.

RESULTS

Means and standard deviations for bereavement and health outcomes at both time points are presented in Table 1. In terms of bereavement distress, results for our sample showed levels of CG at T1 consistent with those of Boelen et al.'s (2003) mixed bereavement sample ($M = 82.52$, $SD = 20.14$) and elevated levels of depression at T1 and T2 in comparison to individuals suffering from community violence ($M = 9.40$, $SD = 8.45$; Ramchand et al., 2008). PTSD scores in our sample were comparable to those reported in other samples of

TABLE 1 Descriptive Statistics for Bereavement and Health Functioning Measures Among Study Completers ($N = 47$).

Measure	Time 1 M (SD)	Time 2 M (SD)	Test statistic (df)
PCL-C	36.47 (15.22)	34.72 (15.98)	1.37 (46)
BDI-II	15.58 (11.20)	12.93 (12.28)	2.03* (44)
ICG-R	80.36 (24.42)	71.00 (25.10)	4.23** (46)
SF-36			
PCS	48.61 (9.89)	48.53 (9.91)	-.97 (44)
MCS	43.24 (14.06)	45.25 (14.77)	.05 (44)

Note. PCL-C = PTSD Checklist–Civilian Version; BDI-II = Beck Depression Inventory-II; ICG-R = Inventory of Complicated Grief-Revised; SF-36 = Medical Outcomes Study Short Form-36; PCS = SF-36 Physical Component Summary score; MCS = SF-36 Mental Component Summary score.

* $p < .05$; ** $p < .01$.

violently bereaved individuals ($M = 37.3$, $SD = 12.9$; Bonanno et al., 2007) at both T1 and T2. In terms of mental and physical health functioning, MCS scores tended to be lower than PCS scores at both T1 and T2.

Results from paired samples t tests revealed statistically significant declines in both depression and CG scores over the 6-month study period, while changes in PTSD were not statistically significant. In terms of health functioning, no statistically significant changes were observed in either PCS or MCS scores. Correlations between bereavement outcomes and PCS scores revealed only marginally significant positive associations between depression and PCS scores at T1 and between PTSD and PCS scores at both time points (see Table 2). In terms of lagged relations between bereavement outcomes and PCS scores, T1 depression and CG scores were negatively correlated with PCS scores at T2, and T1 PCS scores were significantly and negatively correlated with depression and CG scores at T2. In contrast, symptoms of PTSD, depression, and CG were strongly and significantly related to MCS scores at both T1 and T2.

Mixed-model, repeated-measures analyses were used to examine temporal relations between changes in bereavement outcomes and health functioning (see Table 3). No change in bereavement outcomes was associated with change in PCS scores, although a marginally significant trend was found such that older age was associated with worsening PCS scores. In terms of functional mental health, a statistically significant relation was found, such that a temporal increase in depression was associated with worse MCS scores. Neither PTSD nor CG were associated with changes in MCS scores after accounting for depression. Reverse analyses examining temporal

TABLE 2 Correlations Between Measures of Bereavement Outcome and Health Functioning ($N = 47$).

Bereavement outcome	Time 1		Time 2	
	PCS	MCS	PCS	MCS
Time 1				
PCL-C ^a	-.24	-.68**	-.24	-.64**
BDI-II ^b	-.28†	-.71**	-.41**	-.63**
ICG-R ^a	-.24	-.59**	-.34*	-.48**
Time 2				
PCL-C ^a	-.29†	-.61**	-.25†	-.69**
BDI-II ^b	-.43**	-.52**	-.24	-.77**
ICG-R ^a	-.29*	-.47**	-.17	-.66**

Note. PCL-C = PTSD Checklist–Civilian Version; BDI-II = Beck Depression Inventory-II; ICG-R = Inventory of Complicated Grief-Revised; PCS = SF-36 Physical Component Summary score; MCS = SF-36 Mental Component Summary score.

^aCell sizes for correlations with this variable are $n = 46$.

^bCell sizes for correlations with this variable are $n = 45$.

† $p < .10$; * $p < .05$; ** $p < .01$.

TABLE 3 Mixed-Model, Repeated-Measures Analyses With Bereavement Outcomes as Time-Dependent Covariates ($N=47$).

	Estimate	SE	T	95% CI
PCS				
Age	-.19	.10	-1.85 [†]	-.40, .02
Gender	-3.42	3.86	-.89	-11.26, 4.43
PCL-C	-.16	.13	-1.24	-.42, .10
BDI-II	-.01	.16	-.06	-.33, .31
ICG-R	.00	.07	.05	-.15, .15
Time	.65	1.76	.37	-2.90, 4.20
MCS				
Age	.06	.10	.61	-.14, .26
Gender	-1.70	3.71	-.46	-9.19, 5.79
PCL-C	-.08	.13	-.62	-.35, .18
BDI-II	-.66	.16	-4.04**	-.98, -.34
ICG-R	-.09	.08	-1.17	-.24, .06
Time	.88	1.90	.47	-2.94, 4.71

Note. PCS = SF-36 Physical Component Summary score; MCS = SF-36 Mental Component Summary score; PCL-C = PTSD Checklist-Civilian Version; BDI-II = Beck Depression Inventory-II; ICG-R = Inventory of Complicated Grief-Revised; Time = assessment points (T1 and T2).

[†] $p < .10$; ** $p < .01$.

relations between changes in health functioning and bereavement outcomes, where MCS and PCS scores, along with age and gender, were entered as covariates in a series of mixed-model, repeated-measures analyses and bereavement outcomes were entered as dependent variables, found that temporal decreases in both MCS and PCS scores were associated with improvements in PTSD and depression. After controlling for age and gender, only improvements in MCS scores were associated with improvements in CG, although a statistically significant trend emerged such that improvements in PCS scores were also associated with improvements in CG.

In terms of the individual SF-36 health functioning domains, statistically significant relations were found such that temporal increases in PTSD were associated with more physical role limitations ($t = -2.16$, $p < .05$, 95% confidence interval [CI] = $-1.90, -.08$) and more emotional role limitations ($t = -2.56$, $p < .05$, 95% CI = $-2.13, -.27$). Also, statistically significant relations were found such that temporal increases in depression were associated with less vitality ($t = -5.95$, $p < .01$, 95% CI = $-2.16, -1.08$), worse mental health ($t = -5.14$, $p < .01$, 95% CI = $-1.77, -.78$), and worse social functioning ($t = -2.39$, $p < .05$, 95% CI = $-1.49, -.14$). A statistically significant relation also emerged between CG and social functioning such that a prospective increase in CG was associated with worse social functioning ($t = -2.61$, $p < .05$, 95% CI = $-.74, -.10$). A nonsignificant trend was found between increases in CG and worse mental health ($t = -1.98$, $p < .10$, 95% CI = $-.46, .00$). No bereavement outcomes were associated with changes in the physical functioning, pain, or general health domains.

DISCUSSION

We examined temporal relations between responses to loss and mental and physical health outcomes in a sample of 47 African American homicidally bereaved adults. We found that levels of depression and CG improved appreciably in terms of statistical significance; however, we found no statistically significant change in PTSD symptoms from T1 to T2, suggesting that bereavement-related PTSD may be more persistent than depression or CG. Although time cannot be expected to heal all wounds, especially following violent loss, it is conceivable that time would have effected some level of positive change in terms of mental and emotional distress for most individuals. Moreover, although our informed consent form expressly stated that no therapeutic benefit could be guaranteed to individuals as a result of participating in our study, it is likely that having had the opportunity to report aspects of their experience did, in fact, lower distress levels in some individuals between assessment sessions.

A number of bereavement studies with a variety of samples have established a significant association between bereavement distress and mental and physical difficulties (Gilewski et al., 1991; Hardison et al., 2005; Latham & Prigerson, 2004; Murphy et al., 1999; Prigerson et al., 1997). The present findings reinforce their conclusions. However, our results showing no clear temporal association between measures of bereavement outcome (PTSD, depression, and CG) and a subscale of physical health functioning (PCS) are somewhat puzzling. One plausible explanation for this lack of association is that the PCS composite scores may obscure more specific relations between bereavement outcomes and different aspects of physical health functioning. In fact, when exploring relations between bereavement outcomes and specific health functioning domains on the SF-36, we found an association between PTSD and physical role limitations, consistent with findings from other bereaved samples (e.g., Silverman et al., 2000). Although it was surprising that bereavement outcomes, especially PTSD, were not associated with other physical health functioning domains, overall PCS scores in our sample were somewhat higher (signifying lower levels of impairment) than those found in samples of depressed African American adults (Brown, Schulberg, Sacco, Perel, & Houck, 1999). Thus, our participants may represent a higher functioning subset of homicidally bereaved individuals. Another possible explanation is that PTSD, depression, and CG each might have an impact on physical health functioning but that no single dimension of psychopathology is uniquely related to aspects of physical health functioning such as general health when simultaneously accounting for symptoms of each syndrome.

Consistent with previous research, we found that bereavement distress was negatively and strongly associated with low mental health functioning

and emotional well-being. An increase in depressive symptoms from T1 to T2 was associated with a worsening in mental health functioning over time (as assessed by MCS scores)—a finding that remained after statistically accounting for the effects of PTSD and CG. Characteristics of depression, such as low mood, flat affect, and lack of energy and vivacity, can impair one's ability to function well in day-to-day life, including socially, and are linked with signs of higher global mental, emotional, and social distress as assessed using MCS scores (Ware et al., 1995). Furthermore, the MCS is a global measure of overall mental health functioning, and higher levels of bereavement distress are likely mirrored in worse MCS scores. Because the MCS may be conceptually similar to depression, though, further examination of more specific associations between bereavement outcomes and aspects of mental health functioning is needed.

Bereavement outcomes seemed to be differentially associated with unique aspects of mental health functioning, where PTSD was most strongly associated with emotional role limitations. CG was most uniquely associated with impaired social functioning, while depression was associated with multiple impairments in mental health functioning, including impairments in vitality, social functioning, and overall mental health. Thus, among African Americans bereaved by homicide, PTSD seems to be most associated with an inability to perform daily roles, while simultaneously CG and depression seem to correspond with an inability to function in the social world following the loss. Although interpersonal relationships are highly valued in the African American community, particularly as a source of support following normative losses (Rosenblatt & Wallace, 2005; Laurie & Neimeyer, 2008), a state of mourning, intense levels of distress, and the stigma surrounding the loss may have interfered with individuals' ability to interact with others, despite their presumed need to do so. In turn, this social withdrawal may have amplified emotional distress—a plausible conjecture given that Burke and colleagues (2010) found, in a study conducted with this same sample, that both smaller social support networks and higher levels of negative interactions were correlated with higher levels of bereavement distress (i.e., CG, PTSD, and depression). However, the results from the current study also reflect the implied contrast of these implications—that temporal improvements in overall mental health functioning, which includes social functioning and emotional role limitations, are associated with improvements in all forms of bereavement distress. Improvements in PCS scores, however, seem to have the largest impact on PTSD and depression among these survivors.

Study Limitations

To our knowledge, this is the first longitudinal study to examine relations between physical and mental distress and bereavement outcomes in a

sample of African Americans traumatically bereaved by homicide, and yet it is important to acknowledge limitations in our effort to do so. First, having a relatively small sample size and the use of only two assessment sessions limited the types of statistical analyses we could conduct, preventing the use of approaches that might have yielded greater clarity about the relations between the variables in question. The small sample size may have restricted our ability to detect any unique associations between bereavement outcomes and physical health functioning. An additional limitation is that information regarding important griever characteristics such as receipt of mental health services was not available for this sample. However, by addressing these limitations, future studies might clarify aspects of the relation between bereavement and mental distress that currently remain unknown to us.

Similarly, in examining the primary constructs in our study, our power to detect significant effects might have been affected by our use of self-report measures, even though they are well-validated and frequently used in both the bereavement and trauma literature. For instance, if future studies were to use objective measures of health functioning (e.g., physiological measures), this might shed light on more specific health-related processes.

Another limitation of the current study is that we cannot fully attribute changes in health functioning to changes in bereavement outcomes. Indeed, the results suggest that changes in health functioning may be partly responsible for the changes in bereavement outcomes. Future studies should attempt to explore the directionality of these relations. Additionally, the present sample reflects a very specific population: African American residents of a single American city who were homicidally bereaved. The extent to which these findings generalize to other samples, such as those bereaved by other forms of violent death (e.g., suicide, fatal accident, terrorism), or to homicidally bereaved persons of other races, ethnicities, or nationalities will need to be explored in future studies.

Research and Clinical Implications

Our findings not only illustrate the need to understand how poor adaptation to loss can affect the health of individuals who have experienced firsthand the toll of violence, but also emphasize the importance of developing effective prevention methods to assist those who may struggle emotionally and physically for many years following violent loss. In particular, our findings will likely be useful to clinicians in identifying life domains most likely affected by different primary clinical presentations (i.e., PTSD, depression, or CG) following homicide. Encouragingly, some recent evidence suggests that trauma-focused psychotherapies are associated with improvements in self-perceived health (Galovski, Monson, Bruce, & Resick, 2009), but these results also call for future research examining whether interventions

designed to enhance health functioning may similarly produce clinically significant improvements in bereavement distress.

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