



## The efficacy of a brief internet-based self-help intervention for the bereaved

Karolijne van der Houwen<sup>a,\*</sup>, Henk Schut<sup>b</sup>, Jan van den Bout<sup>b</sup>, Margaret Stroebe<sup>b</sup>, Wolfgang Stroebe<sup>c</sup>

<sup>a</sup> Statistics Netherlands, PO Box 4481, 6401 CZ Heerlen, The Netherlands

<sup>b</sup> Department of Clinical and Health Psychology, Utrecht University, PO Box 80140, 3508 TC Utrecht, The Netherlands

<sup>c</sup> Department of Social and Organizational Psychology, Utrecht University, PO Box 80140, 3508 TC Utrecht, The Netherlands

### ARTICLE INFO

#### Article history:

Received 2 April 2009

Received in revised form

14 December 2009

Accepted 15 December 2009

#### Keywords:

Bereavement

Grief

Intervention

Internet

Rumination

### ABSTRACT

Research so far has shown little evidence that written disclosure facilitates recovery from bereavement. There are good reasons to assume that written disclosure may only benefit those bereaved who are at risk for developing problems or who are experiencing significant psychological problems as a result of their loss, and only when appropriate writing instructions are used. Drawing on previous work in the area of post-traumatic stress, a writing intervention was designed to test these assumptions. Bereaved individuals, who were still significantly distressed by their loss, were randomly assigned to the intervention condition ( $N = 460$ ) or a waiting-list control condition ( $N = 297$ ). Both groups filled in questionnaires online at baseline, and 3 and 6 months later. The intervention was administered via e-mail immediately after baseline measurement. Results showed that writing decreased feelings of emotional loneliness and increased positive mood, in part through its effect on rumination. However, writing did not affect grief or depressive symptoms. Contrary to expectations, effects did not depend on participants' risk profile or baseline distress level. Implications of these findings are discussed.

© 2009 Elsevier Ltd. All rights reserved.

Writing has been used as a coping tool by bereaved people through the centuries. On the one hand, this has been undertaken spontaneously by bereaved people, as illustrated in Rosenblatt's (1983) compilation of 19th century diaries, which explores the content of diaries written by people dealing with bereavement or separation. On the other hand, writing has taken place on the instruction of a professional as part of grief therapy (de Keijser, Boelen, & van den Bout, 1998). Systematic research into the effectiveness of writing for the bereaved has only recently begun, and has been greatly influenced by the work of Pennebaker et al. In this article, we first discuss this influential work, from which two principal lines of research into the efficacy of writing as a bereavement intervention have evolved. The first of these focuses on interventions open to all bereaved, the second on those for persons experiencing complications in their grief. Findings from both lines of research are discussed. Against this background, we present the design for a randomized controlled trial to test the efficacy of a newly developed writing intervention specifically for bereaved people. This integrates elements from both lines of research, and addresses the main weaknesses of previous studies. It also explores processes that are postulated to underlie the efficacy of this intervention.

### The traditional Pennebaker paradigm

In 1986 Pennebaker and Beall published a seminal paper reporting an investigation in which they asked individuals to write about their thoughts and feelings concerning a traumatic event for 15 min a day over four consecutive days. The results showed improved health over subsequent months when compared with control participants who wrote about superficial topics. This impressive finding led to an expansion of studies using the expressive writing paradigm. These were undertaken with a wide range of participants, using different instructions, settings, outcome measures, and theoretical frameworks (Smyth & Pennebaker, 2008). In a recent meta-analysis bringing together this body of research, Frattaroli (2006) concluded that experimental disclosure is beneficial for one's psychological health, physical health, and overall functioning, but that its average effect size is small.

### Use of the Pennebaker paradigm in bereavement

Researchers soon recognized the potential of this technique for bereaved people. However, studies that have induced disclosure in bereaved individuals via the traditional Pennebaker paradigm, using a randomized control group design, have generally failed to confirm the disclosure effect (Bower, Kemeny, Taylor, & Fahey, 2003; O'Connor, Allen, & Kaszniak, 2005; O'Connor, Nikolett, Kristjanson, Loh, & Willcock, 2003; Kovac & Range, 2000; Range, Kovac, &

\* Corresponding author. Tel.: +31 45 570 7312; fax: +31 45 570 6272.

E-mail address: [hk.vanderhouwen@cbs.nl](mailto:hk.vanderhouwen@cbs.nl) (K. van der Houwen).

Marion, 2000; Segal, Bogaards, Becker, & Chatman, 1999; Stroebe, Stroebe, Schut, Zech, & van den Bout, 2002; for a review see Stroebe et al., 2002). These investigations have included different samples (e.g. students bereaved by suicide, men and women whose partner had died) and have addressed both psychological and health outcomes. Moreover, all studies have used multiple outcomes, thus increasing the likelihood that a positive result would be obtained. Only in one study was a small improvement in self-reported hopelessness observed (Segal et al., 1999), while in one other (Kovac & Range, 2000), improvement was observed using a measure specific to grief following a suicide (but no effect was found on general grief).

### Structured writing for treating complications in bereavement

Another group of researchers appeared to have more success using writing assignments with bereaved individuals. Lange, Rietdijk, Hudcovicova, van de Ven, Schrieken, and Emmelkamp (2003) were the first to develop and evaluate a treatment for PTSD and complicated grief, in which the central therapeutic procedure also involved writing assignments. This treatment – Interapy – was conducted online and consisted of psycho-education, ten 45-min writing sessions, and personalized feedback. The writing assignments were based on established therapies for post-traumatic stress disorder and research into the effectiveness of social sharing, and consisted of three phases: imaginary exposure, cognitive reappraisal, and social sharing.

Findings from a randomized controlled trial showed that participants in the treatment condition improved more than participants in the waiting-list control condition on trauma-related symptoms and general psychopathology (Lange et al., 2003). However, both persons with PTSD and complicated grief were included and results were provided for the entire group and not for the two groups separately. Thus, one cannot be sure that Interapy was effective for bereaved individuals per se.

Building on the work of Lange et al. (2003), and Wagner, Knaevelsrud, and Maercker (2006, 2007) designed and tested an Internet-based cognitive-behavioural therapy program for bereaved people suffering from complicated grief. The first phase of their intervention was similar to the one used by Lange et al. (2003). The cognitive restructuring and social sharing phases, on the other hand, focused on rather different elements that are more suitable to the bereavement situation. Findings from a randomized controlled trial showed that participants receiving the new treatment improved significantly immediately after treatment relative to participants in the waiting-list control condition on symptoms of intrusion, avoidance, and general psychopathology as well as on post-traumatic growth (Wagner et al., 2006, 2007). Unfortunately, no long-term effects were investigated. Also, Wagner et al. did not use a grief-specific outcome measure, but instead relied on a trauma-specific measure that may not have been appropriate for all types of bereavement. Thus, the impact of this type of intervention on grief remains unknown. Notwithstanding these limitations, the research of Wagner et al. suggests that structured writing assignments can help improve bereaved individuals' mental health, at least in the short term.

### Toward explanation of the differences in findings

So how is it that the two lines of research described above could lead to apparently conflicting conclusions? Four major features distinguish them from each other, each of which could contribute to the discrepancy: (1) the targeted population (unselected bereaved versus bereaved experiencing significant difficulties in coping with their loss); (2) the (non) employment of cognitive-behavioural principles; (3) inclusion of psycho-education and therapeutic feedback; (4) number of essays and duration of writing.

While all four factors could be critical, in our view there are good reasons initially to focus further empirical evaluation on the first two. With regard to the targeted population, we posit that bereaved people in general do not benefit from the disclosure manipulation, because they can talk about their loss naturally, that is, within the context of their daily interactions. Despite the intensity of the emotions it arouses, bereavement is not usually an experience that is out of the ordinary, in the sense that it is a normal human experience for people to die and for their survivors to grieve for them.

The above argument is in agreement with general research on the efficacy of intervention for bereaved people (for a review see Currier, Neimeyer, & Berman, 2008). Interventions that are open to all bereaved people generally fail to produce better outcomes than would be expected by the passage of time. Only in cases of high risk and complicated grief are beneficial effects of intervention to be found. Given these findings, we would expect that only a subsample of bereaved individuals would profit from expressive writing: those who are at high risk for developing problems and those who have already developed problems. This could explain – in part – why Wagner et al. (2006, 2007) who focused on persons suffering from complicated grief, did find effects, whereas studies that used the traditional Pennebaker paradigm and included all bereaved did not.

With regard to the second factor: another important reason why effects were found by Wagner et al. (2006, 2007) could be that more powerful writing instructions, better fitted to the bereavement situation, were used. The instructions were highly specific, clearly indicating what should be the focus of the assignment, whereas the traditional Pennebaker instructions were far less structured, merely indicating a need to write about deepest feelings and thoughts regarding a certain topic. The instructions used by Pennebaker would be more likely to invite ruminative accounts. Nolen-Hoeksema (2001) has consistently found associations between rumination, negative affect and poor adjustment in bereavement, and has identified ruminative coping as detrimental to positive outcomes.

In addition, there are theoretical reasons why an exclusive focus on the loss (as encouraged in the Pennebaker paradigm) might not be beneficial. The Dual-Process Model (DPM; Stroebe & Schut, 1999) postulates two coping strategies, loss- and restoration-orientation, attention to both of which is needed for favourable psychological adjustment in bereavement. The protocol by Wagner et al. (2006, 2007) is in line with the DPM, in so far that it emphasizes loss-orientated coping in the first phase, and restoration and integration in phases two and three.

Finally, the writing assignments that Wagner et al. (2006, 2007) developed were heavily influenced by cognitive-behavioural principles. A substantial number of randomized controlled trials and several meta-analyses have demonstrated cognitive-behavioural therapy to be efficacious in the treatment of many mental disorders (for a review, see Leichsenring, Hiller, Weissberg, & Leibing, 2006). Recently it has also been shown to have superior effects in the treatment of complicated grief, compared to interpersonal psychotherapy (Shear, Franck, Houck, & Reynolds, 2005) and supportive counselling (Boelen, de Keijser, van den Hout, & van den Bout, 2007).

### Overview of the current study

In summary then, we contend that writing can benefit the bereaved, but only those bereaved who are at risk for developing problems and those who are experiencing complications in their grief, and only when appropriate instructions are used that are tailored to the bereavement situation. The aim of this study was to test these assumptions. For this purpose, we developed and evaluated a writing intervention that draws from both lines of research described earlier. Similar to research that has used the traditional Pennebaker paradigm, this intervention consists of a limited number

of assignments and no personalized feedback is provided. The content of the assignments, on the other hand, is heavily influenced by the work done by Lange et al. (2003) and van Emmerik (2005). Should this intervention prove effective, it could offer a cost-effective alternative to the treatment offered by Wagner et al. (2006), because it eliminates the need for trained personnel to provide feedback.

In testing this intervention, a number of methodological improvements were implemented. Grief-specific as well as generic measures of adjustment were included; the immediate as well as the long-term effects of the intervention were investigated; and appropriate analyses to handle attrition were used. Moreover, attention was paid to processes that might mediate the effect of the intervention. Over the years, researchers have attempted to explain the mechanisms underlying the benefits of experimental disclosure (for an overview, see Frattaroli, 2006). However, to our knowledge, no such attempts to establish underlying mechanisms have yet been made in the bereavement area. Given the particular nature of this intervention, which includes exposure and cognitive restructuring as its central components, we identify three potential mediating processes, all of which have been linked to detrimental outcomes in bereavement: deliberate grief avoidance (e.g. Bonanno, Papa, Lalande, Zhang, & Noll, 2005), rumination (e.g. Nolen-Hoeksema, 2001) and threatening grief interpretations (Boelen, van den Bout, & van den Hout, 2006).

We expect the intervention to have a positive effect on the mental health of those bereaved who are at risk for developing problems or who are experiencing significant psychological problems as a result of their loss. Clearly, there may be overlap between these groups (i.e. most people who are at risk will probably be experiencing problems). However, we feel that it is important for conceptual reasons to make this distinction. We also expect the impact of the intervention on mental health to be mediated by its effect on deliberate grief avoidance, rumination, and threatening grief interpretations.

## Method

### Participants

Participants were recruited in two ways: (1) via the Internet, through websites, forums, and e-mail groups that focus on bereaved persons, (2) via organizations and support groups for the bereaved. Due to the worldwide accessibility of the Internet, participants did not come from a specific area or country. Most of them resided in the USA (66%) or the UK (19%). To be included in the study, people had to meet the following criteria: (1) at least 18 years of age, (2) native English speaker, (3) having experienced the death of a first-degree relative, (4) still being significantly distressed by this loss.<sup>1</sup> People who reported that they were suffering from severe depression, schizophrenia, psychotic episodes and/or were seriously considering ending their life were excluded from the study, as were people who suffered their loss at a very early age. The sample consisted of 757 bereaved individuals, 460 in the intervention and 297 in the control condition.<sup>2</sup> Background and loss characteristics are summarised in Table 1.

<sup>1</sup> It was mentioned that participants should be both native English speakers and still significantly distressed by their loss, in both the recruitment message and registration form. These criteria were not further assessed during baseline.

<sup>2</sup> Seven participants had suffered multiple simultaneous losses. This constituted a problem for our study, because both the questionnaires and the intervention were designed with the idea that persons should respond with one particular loss in mind. This small subgroup was not excluded from our study (extra questionnaires were designed especially for this group, and writing assignments were adjusted to fit their specific situation). However, given their small number, we had to exclude them from the current data analysis and they are left out of the sample characteristics presented in Table 1.

**Table 1**  
Background and loss characteristics of the sample at baseline ( $n = 757$ ).

Background characteristics	
Gender (N (%))	
Men	49 (6.5%)
Women	708 (93.5%)
Age (in years) (M (SD); minimum–maximum)	43.22 (10.98); 18–81
Education (highest level of schooling) (N (%))	
Low	127 (16.8%)
Medium	356 (47.0%)
High	274 (36.2%)
Loss characteristics	
Deceased is (N (%))	
Child	322 (42.5%)
Partner	230 (30.4%)
Parent	126 (16.6%)
Sibling	79 (10.4%)
Cause of death	
Natural causes	498 (65.8%)
Accident/homicide	167 (22.1%)
Suicide	92 (12.2%)
Time from loss (in years) (M (SD))	3.37 (5.24)
< 6 months	180 (23.8%)
>= 6 months and <12 months	116 (15.3%)
>= 12 months and <24 months	138 (18.2%)
>= 2 years and <5 years	168 (22.2%)
>= 5 years or more	155 (20.5%)

No differences between the participants in the control and intervention condition were found on relevant background and loss-related variables or any of the mediator or outcome variables at the first measurement point, suggesting that randomization was successful.

### Procedure

The study was IRB-approved. Recruitment took place over a 7-month period, between October 2006 and May 2007. People interested in participating were referred to a website that was created especially for this study, and that provided them with all the necessary information to make an informed decision about participating in the study. People were able to register for the study and give their consent by filling out a form on the website. Upon registering, participants were automatically randomly assigned to the intervention or the control condition.<sup>3</sup> Participants in the control condition were not given any writing assignments, but they were offered the opportunity to participate in the intervention immediately after answering the last set of questionnaires.

Participants were sent e-mails inviting them to fill in questionnaires online at three points in time: immediately, 3 and 6 months after registering for the study. Questionnaires measured background and loss-related variables, and aspects of mental and physical health, personality and coping behaviour. In addition to this, participants assigned to the intervention condition were sent the writing assignments by e-mail after answering the first set of questionnaires. The sending of the assignments was spaced at one-week intervals and was conditional on the completion and return of previous assignments. Up to two reminder e-mails were sent if participants failed to comply with our requests. It took participants almost seven weeks on average to complete all assignments. See Fig. 1 for participant flow and dropout data.

<sup>3</sup> At the beginning of the study a 1:1 random assignment ratio was used. Because the dropout rate turned out to be higher in the intervention than in the control condition, this ratio was changed to 2:1 during the course of the recruitment period (after 5 months) so that twice as many participants were assigned to the intervention as to the control condition.

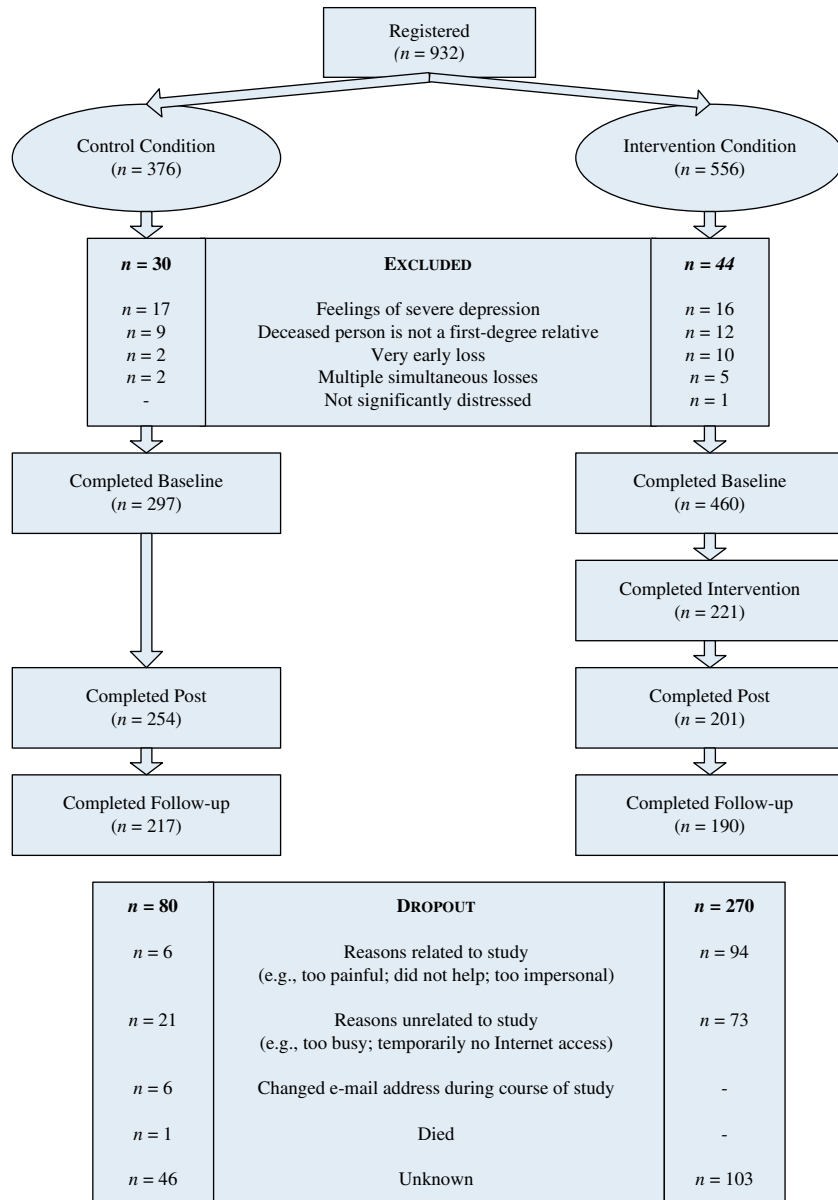


Fig. 1. Participant flow and dropout.

As can be seen in Fig. 1, of the original 460 persons in the intervention condition and 297 persons in the control condition who completed the baseline measure, 190 and 217 respectively completed the program (i.e. including intervention and/or post-test and follow-up measures). This reflects an attrition rate of 46% (59% in the intervention and 27% in the control condition) over the course of the study, a rate that is even comparable with bereavement studies that have not included an intervention or follow-up over many months (cf. Stroebe & Stroebe, 1989). A logistic regression analysis was performed in order to check for differences between completers and non-completers with dropout as the dependent variable and relevant background and loss-related variables, the outcome variables (of the regular analyses), the mediator variables, and condition (control or intervention condition) as independent variables. According to the Wald criterion, age, education level, grief, and condition reliably predicted dropout: completers were older ( $\chi^2(1, N = 747) = 17.77, p < .001$ ), had higher levels of education ( $\chi^2(1, N = 747) = 10.18, p < .01$ ), experienced less grief ( $\chi^2(1, N = 747) = 8.40, p < .01$ ), and were

more likely to be part of the control condition ( $\chi^2(1, N = 747) = 72.11, p < .001$ ) than non-completers. Participants assigned to the intervention condition were most likely to dropout after receiving the first assignment: 25% of participants who were sent the first assignment did not complete it.

Measurement instruments

Exclusion indicators

The first four questions of the first questionnaire addressed whether participants suffered from schizophrenia or psychotic episodes, whether they had considered themselves to be severely depressed over the last four weeks and whether they had seriously considered ending their own life over the last four weeks.

Background and loss-related variables

At the first measurement point questions were asked about age, gender, education level (measured on a 7-point scale), changes in financial situation due to the loss, current financial situation, level



of spirituality, formal relationship to the deceased, cause of death (natural causes/accident or homicide/suicide), level of unexpectedness of the death, and time since death.

#### Personality

*Attachment organization* was measured using the well-validated Experiences in Close Relationships-Revised Questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000). The ECR-R assesses individual differences with respect to attachment-related anxiety and attachment-related avoidance. The ECR-R items were originally worded to be relevant to romantic relationships. Following Fraley's suggestions the word "partner" was therefore replaced by the word "others" to make the items relevant to other kinds of relationships. Participants filled out the ECR-R at all three points in time; however in this article only data from the first measurement point were used. Cronbach's alpha was .93 for both attachment-related anxiety and attachment-related avoidance.

*Neuroticism* was measured at the first measurement point using the 8-item subscale of the Big Five Inventory (BFI; John & Srivastava, 1999). In this study, Cronbach's alpha was .83.

#### Social support

Social support was assessed at all three measurement points with a four-item scale of perceived social support, comprising the same two items for family members and for friends and relatives (a) "On the whole, how much do your family members (friends and relatives) make you feel loved and cared for?" and (b) "How much are your family members (friends and relatives) willing to listen when you need to talk about your worries or problems?" (W. Stroebe, Zech, Stroebe, & Abakoumkin, 2005). Response categories range from "a great deal" to "not at all", and "not applicable". In this paper only data from the first measurement point were used. Cronbach's alpha was .88.

#### Mediator variables

The three mediator variables were measured at all three points in time. *Rumination* was measured with a self-constructed 8-item questionnaire that was based on literature on rumination in general (e.g. Nolen-Hoeksema, 1991) and on rumination in bereavement specifically (e.g. Boelen, van den Bout, et al., 2006). An example of an item is: "I think about how bad I feel since my [...] died".<sup>4</sup> The blank was filled in with the appropriate relationship word (e.g. partner). Items were rated with respect to the past week on a 5-point scale ranging from (almost) never (=1) to (almost) constantly (=5). Statistical findings indicated that it was justified to treat the items as forming a single scale at all three measurement points: Cronbach's alpha ranged from .86 to .89, the mean item-total correlation of the 8 items ranged from .61 to .67, and all items had factor loadings of >.55 in a one factor solution. Therefore item ratings were summed to form a single score.

*Threatening grief interpretations* were measured using the two items with the highest factor loadings from the 4-item subscale "Threatening interpretation of grief" of the Grief Cognitions Questionnaire (GCQ; Boelen & Lensvelt-Mulders, 2005): "If I allow my feelings to run loose, I will lose control" and "If I would fully realise what the death of my [...] means, I would go crazy". Agreement with the items was rated on a 6-point scale ranging from strongly disagree (1) to strongly agree (6). Cronbach's alpha ranged from .70 to .78.

*Deliberate grief avoidance* was measured with 13 items that were formulated on the basis of literature on avoidance in grief (e.g. Bonanno et al., 2005). An example of an item is: "I avoid activities I

used to do with my [...]".<sup>4</sup> Items were rated with respect to the past week on a 5-point scale ranging from (almost) never (=1) to (almost) constantly (=5) or participants could indicate that the item did not apply to them. Statistical findings indicated that it was justified to treat the items as forming a single scale on all three measurement points: Cronbach's alpha ranged from .86 to .89, the mean item-total correlation of the 13 items ranged from .54 to .60, and all items had factor loadings of >.44 in a one factor solution. Therefore a mean avoidance score was calculated by summing item scores and dividing them by the number of items answered.

#### Outcome measures

The four outcome variables were also measured at all three points in time. *Grief reactions* were measured using 9 items that were formulated on the basis of the criteria for complicated grief proposed for DSM-V (Prigerson, Vanderwerker, & Maciejewski, 2008). An example of an item is: "I have felt that moving on with my life (for example, making new friends, pursuing new interests) is difficult for me".<sup>4</sup> It has been shown that these 9 items constitute a concise way of measuring complicated grief (H. Prigerson, personal communication, March 10, 2006). Items were rated with respect to the past week on a 5-point scale ranging from never (=1) to all of the time (=5). Cronbach's alpha ranged from .88 to .92.

*Depressive symptoms* were assessed using the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). In this study, Cronbach's alpha ranged from .92 to .94.

*Positive mood* was measured using the corresponding 10 items of the Positive Affect Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). In this study, Cronbach's alpha ranged from .93 to .95.

*Emotional loneliness* was measured using the following two items: (1) I feel lonely even if I am with other people, and (2) I often feel lonely (Stroebe, Stroebe, Abakoumkin, & Schut, 1997). Participants indicated their (dis)agreement with these statements on a 7-point scale ranging from totally disagree (=1) to totally agree (=7). Cronbach's alpha ranged from .80 to .86.

#### The intervention

Five structured confrontational writing assignments and some general guidelines for writing were developed based on (1) research into the effectiveness of the Pennebaker paradigm (e.g. King, 2001), (2) research into the effectiveness of structured confrontational writing (e.g. van Emmerik, 2005), (3) basic cognitive-behavioural principles, and (4) up-to-date bereavement research (e.g. Boelen, van den Hout, & van den Bout, 2006).<sup>4</sup> The general guidelines for writing included information about what was expected of participants in terms of time investment and deadlines, but also contained advice, for example about when to write and urged them not to worry about grammar, spelling, or writing style.

The five assignments followed the three phases outlined by Lange et al. (2003): exposure, cognitive reappraisal, and integration and restoration. In the first two assignments (exposure phase) participants were asked to focus on the most distressing aspects of the loss, in relation to the loss event (in the first assignment) and with regard to their current situation (in the second assignment), and to describe these aspects in as much detail as possible. In the second part of the second assignment participants were asked to describe matters that were going reasonably well given the circumstances. This was done to help counter the negative increase in mood that accompanies describing distressing events. Moreover, evidence has been found that disclosing positive events is as equally beneficial as disclosing negative events (Frattaroli, 2006). The third and fourth assignments constituted the cognitive reappraisal phase. In the third assignment information was given about

<sup>4</sup> All materials can be obtained from the first author.

the detrimental effects of dysfunctional grief cognitions using examples and a short vignette. Participants were then asked to identify any unhelpful and helpful thoughts they might be having with respect to their loss, to describe how these thoughts made them feel, and to write down helpful thoughts that might replace the unhelpful thoughts. The fourth assignment asked participants to write a letter of advice to a (hypothetical or real) friend who recently suffered a similar loss and now faces the same difficulties. The letter should, among other things, incorporate lessons learned from the previous three assignments, and challenge negative thinking. In the last assignment (integration and restoration phase) participants were asked to write a letter to the deceased from a future perspective detailing how they overcame obstacles and succeeded at accomplishing their goals. Participants were also encouraged to address the meaning (if any) of their loss and any lessons they might have learned. It has been reported that writing about one's "best possible self" has health benefits, possibly because it influences self-regulatory processes (e.g. King, 2001; for a review see Frattaroli, 2006). Moreover, a lack of future orientation has been associated with the development and maintenance of complicated grief (Boelen, van den Hout, et al., 2006).

### Analyses

A multilevel modelling strategy was adopted for this study. Longitudinal data can be viewed as multilevel data, with repeated measurements nested within individuals. In this study this leads to a two-level model, with the series of repeated measures at the lowest (1st) level, and the participants at the highest (2nd) level. Important advantages of this approach are, first, that it does not assume equal numbers of observations, which means that all cases can remain in the analyses, thereby increasing the precision of the estimates and the power of the statistical tests (Hox, 2002). Second, with regard to dropout, Little (as cited in Hox, 2002) has shown that when the panel attrition follows a pattern defined as missing-at-random, multi-level analysis leads to unbiased estimates. Multilevel modelling was implemented through MLWiN, Version 2.0.

## Results

### The efficacy of the intervention

To test the efficacy of the intervention, a model was constructed for each of the outcome measures containing an intercept term, time (i.e. time since registration for the study (in months)) as a linear predictor and time  $\times$  time as a quadratic predictor. The quadratic predictor was dropped from the model if it turned out to be non-significant. Next, the following predictors were added to the model: age and education level (to control for the effects of dropout), gap (i.e. number of weeks between the completion of the intervention and the second measurement point), dummy-gap,<sup>5</sup> and condition (control or intervention condition). Gap and dummy-gap were dropped from the model if gap turned out to be non-significant. The fit of the resulting model was then compared to the fit of the same model with the time factor made random at the

participant level to check whether the regression coefficient for time differed between participants. If entering time as a random effect improved the model, the efficacy of the intervention was determined by adding condition  $\times$  time as a predictor to the final model (Intervention model).<sup>6</sup>

Table 2 gives means and standard deviations for the outcome measures. The results of the multilevel analyses investigating the efficacy of the intervention are presented in Table 3. As can be seen in this table, participants' mental health improved over time: grief, depression and emotional loneliness decreased over the study's 6-month period while positive mood increased. For grief, depressive symptoms, and positive mood fit was improved by adding a quadratic trend for time: data showed that grief and depressive symptoms decreased more whereas positive mood increased more between the first and second measurement point than between the second and third measurement point. The decrease in grief and depressive symptoms was not dependent on condition ( $b = -.017$ ,  $t = -.753$ ,  $p = .45$  resp.  $b = -.033$ ,  $t = -.891$ ,  $p = .37$ ). On the other hand, emotional loneliness and positive mood were influenced by the intervention in a positive way: participants in the intervention condition experienced a stronger decrease in emotional loneliness ( $b = -.028$ ,  $t = -2.393$ ,  $p < .05$ ) and a stronger increase in positive mood ( $b = .071$ ,  $t = 2.379$ ,  $p < .05$ ) than participants in the control condition.

We calculated Cohen's  $d$  effect sizes following recommendations by Morris (2008). Short- and long-term effect sizes were .19 and .25 for emotional loneliness and .30 and .23 for positive mood respectively.

### Risk as moderator

To test our hypothesis that expressive writing may only benefit those bereaved who are at risk for developing problems, a measure for "being at risk" was created. For this, data were used from a different study that included multivariate analyses to establish which factors uniquely and significantly contributed to the explanation of variance in the outcome measures (for more information, see van der Houwen, Stroebe, Stroebe, Schut, van den Bout, & Wijngaards-de Meij, in press). A regression analysis was conducted for each of the outcome measures with the risk factors that uniquely predicted it as the independent variables.<sup>7</sup> The predicted values of the regression analyses were then saved and used as risk scores (resulting in four different risk scores per participant, one for each outcome measure). Finally, a model was constructed for each of the outcome measures by adding the following predictors to the Intervention model: risk (i.e. the appropriate risk score), risk  $\times$  time, risk  $\times$  condition, and risk  $\times$  time  $\times$  condition.

Contrary to expectations, risk did not moderate the efficacy of the intervention for grief ( $b = .013$ ,  $t = .606$ ,  $p = .54$ ), depressive symptoms ( $b = .029$ ,  $t = .795$ ,  $p = .43$ ), emotional loneliness ( $b = .000$ ,  $t = .002$ ,  $p = 1.00$ ) or positive mood ( $b = -.006$ ,  $t = -.199$ ,  $p = .84$ ).

<sup>6</sup> Not only people who had suffered a loss very recently, but also those who had experienced a loss several decades ago were allowed to participate. In order to check for any effects this may have had on our findings, all analyses were rerun with "time since death" as a covariate. This did not in any way change the results.

<sup>7</sup> Grief was uniquely predicted by (un)expectedness of the death, gender, attachment avoidance, social support, and financial situation deterioration (yes or no); depressive symptoms were uniquely predicted by (un)expectedness of the death, attachment avoidance, social support, medication use (yes or no), and adequacy of financial situation (adequate versus not adequate); emotional loneliness was uniquely predicted by attachment anxiety, attachment avoidance, financial situation deterioration, and kinship; positive mood was uniquely predicted by gender, attachment avoidance, neuroticism, social support, and spirituality.

<sup>5</sup> For participants in the intervention condition who did not complete the intervention and participants in the control condition, data regarding the time between the completion of the intervention and the second measurement point would be missing. Following Cohen and Cohen (1983), and using the missing data dichotomy, a dummy variable was created on which all participants who had missing data on the variable gap received a score of 0, while those participants whose data were not missing on this variable were given a score of 1. For the missing scores on gap, means from participants who had scores on this variable were substituted.

**Table 2**

Mean scores of the outcome measures (SD in parentheses) for the intervention and control condition.

	Intervention condition			Control condition		
	Baseline	Post	Follow-up	Baseline	Post	Follow-up
Grief	26.3 (8.0)	21.5 (8.3)	20.9 (8.9)	26.3 (8.1)	23.5 (8.7)	21.8 (8.7)
Depressive symptoms	25.5 (12.0)	19.7 (12.0)	18.6 (13.1)	25.6 (12.1)	21.8 (12.8)	19.8 (13.4)
Emotional loneliness	9.3 (3.5)	8.3 (3.9)	7.6 (4.0)	9.2 (3.8)	8.9 (3.9)	8.1 (4.0)
Positive mood	25.8 (8.7)	30.4 (9.4)	30.4 (9.4)	26.2 (8.9)	27.8 (9.9)	29.1 (10.0)

### Baseline distress as moderator

To test our hypothesis that expressive writing may only benefit those bereaved who are experiencing significant psychological problems as a result of their loss, participants were divided into two groups: those who reported significant psychological problems versus those who did not. This was done using two different measures of psychological distress: grief and depressive symptoms. Using a tertile split procedure, two dummy variables were created: one that divided participants in those with high (highest tertile) versus low (lowest tertile) levels of grief at baseline, and one that divided participants in those with high (highest tertile) versus low (lowest tertile) levels of depressive symptoms at baseline. A model was then constructed for each of the outcome measures by adding the following predictors to the Intervention model: dummy (i.e. low versus high grief or low versus high depressive symptoms), dummy  $\times$  time, dummy  $\times$  condition, and dummy  $\times$  time  $\times$  condition.

Contrary to expectations, baseline grief levels did not moderate the efficacy of the intervention for grief ( $b = .021, t = .408, p = .68$ ), depressive symptoms ( $b = -.060, t = -.704, p = .48$ ), emotional loneliness ( $b = -.002, t = -.061, p = .95$ ) or positive mood ( $b = .036, t = .512, p = .61$ ). In a similar vein, baseline depressive symptoms levels did not moderate the efficacy of the intervention for grief ( $b = .056, t = 1.081, p = .28$ ), depressive symptoms ( $b = -.041, t = -.575, p = .57$ ), emotional loneliness ( $b = .026, t = .971, p = .33$ ) or positive mood ( $b = .007, t = .119, p = .91$ ).

### The mediating effect of rumination, threatening grief interpretations, and deliberate grief avoidance

Both Baron and Kenny's approach to mediation (1986) and Sobel's  $t$ -test (1982) were used to examine whether the effect of expressive writing on emotional loneliness and positive mood was mediated by rumination, threatening grief interpretations and deliberate grief avoidance. First, we tested whether the

intervention impacted the three mediators. These analyses showed that participants in the intervention condition experienced a stronger decrease in rumination than participants in the control condition ( $b = -.049, t = -2.250, p < .05$ ). We then repeated the analyses that were used to test the effect of the intervention on emotional loneliness and positive mood with rumination included as an extra predictor. Rumination was significantly associated with both emotional loneliness ( $b = .180, t = 14.818, p < .001$ ) and positive mood ( $b = -.462, t = -15.718, p < .001$ ) while controlling for the effect of the intervention. Furthermore, adding rumination to the equation resulted in the intervention no longer having a significant effect on emotional loneliness ( $b = -.019, t = -1.655, p = .10$ ) or positive mood ( $b = .050, t = 1.734, p = .08$ ). The statistical significance of the mediation effect was confirmed using Sobel's  $t$ -test, both for emotional loneliness ( $t = -2.225, p < .05$ ) and positive mood ( $t = 2.227, p < .05$ ). Following recommendations by Mackinnon (2008) we calculated that 31% of the effect of the intervention on emotional loneliness and 32% of the effect of the intervention on positive mood was mediated by rumination.

### Discussion

Although writing has been used as a coping tool by bereaved persons for a long time (Rosenblatt, 1983), research into its effectiveness has only recently started and has resulted in different findings. In this study, we tested the hypothesis that written disclosure may only benefit those bereaved who are at risk for developing problems or who are experiencing significant psychological problems as a result of their loss, and only when appropriate writing instructions are used. Our findings showed that writing decreased feelings of emotional loneliness and increased positive mood, in part through its effect on rumination. However, writing did not affect grief or depressive symptoms. The effects that we found did not depend on participants' risk profile or baseline distress level.

The fact that we found overall effects of writing on positive mood and emotional loneliness is particularly noteworthy. Effects on positive mood have not been found with the traditional Pennebaker paradigm (O'Connor et al., 2005), which suggests that a more structured intervention, such as the one we designed, is necessary in order to change positive mood. With regard to emotional loneliness, we know of no study that has used the traditional Pennebaker paradigm in bereavement and that has included emotional loneliness as a dependent measure. We therefore cannot be entirely sure that an intervention such as ours would be needed to positively impact on this variable. A similar effect might have been reached with the traditional Pennebaker paradigm.

The effects that we found on emotional loneliness and positive mood though small (.19–.30), were considerably larger than the average psychological health effect sizes found in studies of intervention disclosure that followed participants for at least a month (i.e. .07) (Frattaroli, 2006). Moreover, and importantly, effects were still present at follow-up, which was on average 5 months after participants completed the intervention. This is rare in grief interventions (Currier et al., 2008).

**Table 3**

Intervention model.

	Grief		Depressive symptoms		Emotional loneliness		Positive mood	
	B	SE	B	SE	B	SE	B	SE
Intercept	24.011***	.473	22.651***	.700	8.938***	.197	27.792***	.514
Time	-.171***	.016	-.219***	.027	-.033***	.008	.119***	.022
Time $\times$ time	.005***	.001	.006**	.002	–	–	-.005**	.002
Age	-.065*	.026	-.063	.038	-.009	.012	.024	.028
Education	-.791***	.208	-.599	.307	-.132	.093	.631**	.225
Condition	-.389	.594	-.671	.870	-.368	.2611	.815	.634
Time $\times$ condition	-.017	.022	-.033	.037	-.028*	.012	.071*	.030

Note. Gap (i.e. number of weeks between the completion of the intervention and the second measurement point) was not significantly related to any of the outcome measures and was therefore dropped (together with dummy-gap) from the analyses. Entering time  $\times$  time as a random effect did not improve the model for grief, depressive symptoms or positive mood. Therefore, time  $\times$  time  $\times$  condition was not added as a predictor to the final model.

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



As noted above, whereas we found effects on positive mood and emotional loneliness, our intervention did not lower the level of grief and depressive symptoms. A potential reason for this could be the failure of our intervention to influence avoidance processes: given the nature of the assignments, which we based on cognitive-behavioural principles, we reasoned that the intervention would reach its effect by changing such processes (i.e. deliberate grief avoidance and rumination) and by cognitive restructuring of negative grief interpretations. Even though our intervention had an effect on rumination, deliberate grief avoidance and threatening grief interpretations did not change. It is somewhat surprising that the decrease in rumination did not lead to improvement in grief or depressive symptoms, since our research on mediating processes in bereavement has indicated that rumination plays a role in the prediction of grief and depressive symptoms (van der Houwen, Stroebe, Schut, Stroebe, & van den Bout, submitted for publication). We can only speculate that the impact of the intervention on rumination was too small for an effect to become evident.

We expected writing to be effective for those bereaved who were at risk for developing problems or who were experiencing significant psychological problems as a result of their loss. However, contrary to our expectations, there was no evidence that writing had any effects on grief or depressive symptoms for at risk or highly distressed participants, or that the effects that were found on emotional loneliness and positive mood for the entire sample were higher for these two groups. Of course, it is possible that our assumptions were incorrect. However, we feel that this is unlikely given the large amount of evidence that shows that beneficial effects of intervention are only found in cases of high risk and complicated grief (for a review see Currier et al., 2008). Another possible explanation might be related to the fact that the people who entered our study were on average quite distressed. At the beginning of the study participants had an average depression score of 26 on the CES-D that uses a cut-off score of 16 to indicate mild depression and a cut-off score of 27 to indicate major depression (Zich, Attkisson, & Greenfield, 1990). This may have left insufficient room for moderation effects.

Mediation analyses showed that the effects of writing on emotional loneliness and positive mood were partly reached through rumination. Other processes are likely to have played a role as well. It is possible that sharing thoughts, feelings and news with the deceased in the last assignment increased feelings of connectedness to this person thereby reducing feelings of emotional loneliness. With its focus on a best possible future and ways of getting there, assignment five may also have increased feelings of mastery and control, and induced a sense of optimism, resulting in the experience of positive emotions.

A few limitations of this study deserve attention. First, 52% of our participants did not complete all writing assignments. While this is a high percentage it is important to keep in mind that we included data from all participants in our analyses and controlled for variables that predicted dropout, thereby decreasing any bias that may have resulted from it. A number of possible reasons could have contributed to the relatively high dropout. The assignments themselves were emotionally exacting and time consuming, and the fact that participants were comparatively anonymous might mean that they felt fewer obligations to follow through. As a lack of response automatically resulted in their withdrawal, dropping out did not require any action. We do feel, however, that anonymity and ease of withdrawal were very valuable elements of this study, because they did not put any added pressure on persons already going through a difficult time. Also, by design, hardly any psycho-education and no feedback were provided, both of which could have improved motivation and commitment and decreased dropout. Finally, no explanation was given as to why writing might

prove to be beneficial. Such a rationale could have improved response as well.

One also has to be cautious in generalizing from these findings to the general population of all bereaved persons, given the fact that participants were mostly female, self-selected and to a large extent recruited via the Internet. Selective participation is, however, common in bereavement research (Stroebe & Stroebe, 1989). It remains critically important to acknowledge and to assess the significance of potential biases associated with selection in all investigations.

In our view this study has contributed to the literature in a number of ways. We followed both intervention and control groups over longer periods of time than has been done in past research. This enabled us to establish whether the intervention had a lasting effect. We broadened the scope by including important outcome variables that have not typically been assessed in grief intervention studies before. We examined processes through which the intervention reached its impact.

Nevertheless, further research is clearly necessary. We feel that a focal line of investigation should explore the provision of feedback on writing, given the fact that studies using writing assignments and including feedback on these *did* find positive effects on trauma-related symptoms and general psychopathology. It would also be informative to further investigate the pathways through which writing impacts on emotional loneliness and positive mood. Earlier we made reference to what might be additional pertinent processes. Insight into these could enable us to improve the assignments, resulting in larger effect sizes.

## References

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Boelen, P. A., van den Bout, J., & van den Hout, M. A. (2006). Negative cognitions and avoidance in emotional problems after bereavement: a prospective study. *Behaviour Research and Therapy*, 44, 1657–1672.
- Boelen, P. A., van den Hout, M. A., & van den Bout, J. (2006). A cognitive-behavioral conceptualization of complicated grief. *Clinical Psychology: Science and Practice*, 13, 109–128.
- Boelen, P. A., de Keijser, J., van den Hout, M. A., & van den Bout, J. (2007). Treatment of complicated grief: a comparison between cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology*, 75, 277–284.
- Boelen, P. A., & Lensvelt-Mulders, G. J. L. M. (2005). Psychometric properties of the grief cognitions questionnaire (GCQ). *Journal of Psychopathology and Behavioral Assessment*, 27, 291–303.
- Bonanno, G. A., Papa, A., Lalande, K., Zhang, N., & Noll, J. G. (2005). Grief processing and deliberate grief avoidance: a prospective comparison of bereaved spouses and parents in the United States and the People's Republic of China. *Journal of Consulting and Clinical Psychology*, 73, 86–98.
- Bower, J. E., Kemeny, M. E., Taylor, S. E., & Fahey, J. L. (2003). Finding meaning and its association with natural killer cell cytotoxicity among participants in a bereavement-related disclosure intervention. *Annals of Behavioral Medicine*, 25, 146–155.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioural sciences*. Hillsdale, NJ: Erlbaum.
- Currier, J. M., Neimeyer, R. A., & Berman, J. S. (2008). The effectiveness of psychotherapeutic interventions for bereaved persons: a comprehensive quantitative review. *Psychological Bulletin*, 134, 648–661.
- Van Emmerik, A. A. P. (2005). *Prevention and treatment of chronic posttraumatic stress disorder*. Unpublished doctoral dissertation, University of Amsterdam, The Netherlands.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78, 350–365.
- Frattaroli, J. (2006). Experimental disclosure and its moderators: a meta-analysis. *Psychological Bulletin*, 132, 823–865.
- van der Houwen, K., Stroebe, M., Schut, H., Stroebe, W., & van den Bout, J. Mediating processes in bereavement: the role of rumination, threatening grief interpretations, and deliberate grief avoidance, submitted for publication.
- van der Houwen, K., Stroebe, M., Stroebe, W., Schut, H., van den Bout, J., & Wijn-gaards-de Meij, L. Risk factors for bereavement outcome: a multivariate approach. *Death Studies*, in press.
- Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, NJ: Erlbaum.



- John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: history, measurement, and theoretical perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). New York: Guilford Press.
- de Keijser, J., Boelen, P. A., & van den Bout, J. (1998). Schrijfopdrachten, therapeutische rituelen, systeeminterventies, creatieve therapie en andere interventies. [Writing assignments, therapeutic rituals, system interventions, creative therapy, and other interventions]. In J. van den Bout, P. A. Boelen, & J. de Keijser (Eds.), *Behandelingsstrategieën bij gecompliceerde rouw en verliesverwerking* (pp. 95–113). Houten/Diegem: Bohn Stafleu van Loghum.
- King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin*, 27, 798–807.
- Kovac, S. H., & Range, L. M. (2000). Writing projects: lessening undergraduates' unique suicidal bereavement. *Suicide and Life-Threatening Behavior*, 30, 50–60.
- Lange, A., Rietdijk, D., Hudcovicova, M., van de Ven, J. P., Schrieken, B., & Emmelkamp, P. M. (2003). Interapy: a controlled randomized trial of the standardized treatment of posttraumatic stress through the Internet. *Journal of Consulting and Clinical Psychology*, 71, 901–909.
- Leichsenring, F., Hiller, W., Weissberg, M., & Leibing, E. (2006). Cognitive-behavioral therapy and psychodynamic psychotherapy: techniques, efficacy, and indications. *American Journal of Psychotherapy*, 60, 233–259.
- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. New York: Lawrence Erlbaum.
- Morris, S. B. (2008). Estimating effect sizes from pretest–posttest–control group designs. *Organizational Research Methods*, 11, 364–386.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, 100, 569–582.
- Nolen-Hoeksema, S. (2001). Ruminative coping and adjustment to bereavement. In M. Stroebe, R. O. Hansson, W. Stroebe, & H. A. W. Schut (Eds.), *Handbook of bereavement research: Consequences, coping and care* (pp. 545–562). Washington, DC: American Psychological Association Press.
- O'Connor, M., Nikoletti, S., Kristjanson, L. J., Loh, R., & Willcock, B. (2003). Writing therapy for the bereaved: evaluation of an intervention. *Journal of Palliative Medicine*, 6, 195–204.
- O'Connor, M. F., Allen, J. J. B., & Kaszniak, A. W. (2005). Emotional disclosure for whom? A study of vagal tone in bereavement. *Biological Psychology*, 68, 135–146.
- Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274–281.
- Prigerson, H. G., Vanderwerker, L. C., & Maciejewski, P. K. (2008). A case for inclusion of prolonged grief disorder in DSM–V. In M. Stroebe, R. Hansson, H. Schut, & W. Stroebe (Eds.), *Handbook of bereavement research and practice: 21st century perspectives* (pp. 165–186). Washington, DC: American Psychological Association.
- Radloff, L. S. (1977). The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Range, L. M., Kovac, S. H., & Marion, M. S. (2000). Does writing about the bereavement lessen grief following sudden, unintentional death? *Death Studies*, 24, 115–134.
- Rosenblatt, P. C. (1983). *Bitter, bitter tears: Nineteenth-century diarists and twentieth-century grief theories*. Minneapolis: University of Minnesota Press.
- Segal, D. L., Bogaards, J. A., Becker, L. A., & Chatman, C. (1999). Effects of emotional expression on adjustment to spousal loss among older adults. *Journal of Mental Health and Aging*, 5, 297–310.
- Shear, K., Franck, E., Houck, P. R., & Reynolds, C. F. (2005). Treatment of complicated grief: a randomized controlled trial. *Journal of the American Medical Association*, 293, 2601–2608.
- Smyth, J. M., & Pennebaker, J. W. (2008). Exploring the boundary conditions of expressive writing: in search of the right recipe. *British Journal of Health Psychology*, 13, 1–7.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290–312). San Francisco: Jossey-Bass.
- Stroebe, M., & Schut, H. (1999). The dual process model of coping with bereavement: rationale and description. *Death Studies*, 23, 197–224.
- Stroebe, M., & Stroebe, W. (1989). Who participates in bereavement research? A review and empirical study. *Omega*, 20, 1–29.
- Stroebe, W., Stroebe, M., Abakoumkin, G., & Schut, H. (1997). The role of loneliness and social support in adjustment to loss: a test of attachment versus stress theory. *Journal of Personality and Social Psychology*, 70, 1241–1249.
- Stroebe, M., Stroebe, W., Schut, H., Zech, E., & van den Bout, J. (2002). Does disclosure of emotions facilitate recovery from bereavement? Evidence from two prospective studies. *Journal of Consulting and Clinical Psychology*, 70, 169–178.
- Stroebe, W., Zech, E., Stroebe, M. S., & Abakoumkin, G. (2005). Does social support help in bereavement? *Journal of Social and Clinical Psychology*, 24, 1030–1050.
- Wagner, B., Knaevelsrud, C., & Maercker, A. (2006). Internet-based cognitive-behavioral therapy for complicated grief: a randomized controlled trial. *Death Studies*, 30, 429–453.
- Wagner, B., Knaevelsrud, C., & Maercker, A. (2007). Post-traumatic growth and optimism as outcomes of an internet-based intervention for complicated grief. *Cognitive Behaviour Therapy*, 36, 156–161.
- Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Zich, J. M., Attkisson, C. C., & Greenfield, T. K. (1990). Screening for depression in primary care clinics: the CES-D and the BDI. *International Journal of Psychiatry in Medicine*, 20, 259–277.