

RISK FACTORS FOR BEREAVEMENT OUTCOME: A MULTIVARIATE APPROACH

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Bereavement increases the risk of ill health, but only a minority of bereaved suffers lasting health impairment. Because only this group is likely to profit from bereavement intervention, early identification is important. Previous research is limited, because of cross sectional designs, small numbers of risk factors, and use of a single measure of bereavement outcome. Our longitudinal study avoids these pitfalls by examining the impact of a large set of potential risk factors on grief, depressive symptoms, emotional loneliness, and positive mood following recent bereavement (3 years maximum). Participants provided information 3 times over 6 months. A multivariate approach was chosen to avoid reporting spurious results due to confounding. As expected, risk factors were differentially related to different outcome measures. For example, being high in anxious attachment and having lost a partner were related to more intense feelings of emotional loneliness, whereas these variables did not predict any of the other outcome variables. By contrast, social support did not influence emotional loneliness but did predict grief, depressive symptoms and positive mood. Implications of these findings are discussed.

Extensive research has shown that bereavement is associated with excess risk of mortality and with decrements in both physical and mental health (for a review, see M. Stroebe, Schut, & Stroebe, 2007). Although most people are able to adjust to the death of a loved one without long-lasting difficulties, a sizeable minority is prone to chronically elevated grief reactions (Bonanno & Mancini,

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2008). Much research has been aimed at trying to identify the situational and personal characteristics likely to be associated with increased vulnerability across the spectrum of bereavement outcome variables, in order to understand why bereavement affects people in different ways (M. Stroebe, Folkman, Hansson, & Schut, 2006). This work is important for practical as well as theoretical reasons. Early identification of those who are at risk of suffering lasting health consequences makes it possible to intervene and possibly prevent negative outcomes. Reviews by Schut, Stroebe, van den Bout, and Terheggen (2001) and by Currier, Neimeyer, and Berman (2008) have underscored the need to channel professional help to those who need and will benefit from it. Their reviews show that interventions that are open to all bereaved people (i.e., the criterion for participation being simply that one has experienced a loss through death) generally fail to produce better outcomes than would be expected by the passage of time. By studying risk factors (those associated with higher levels of problems), one can also gain insight into the tenability of theories that explain bereavement outcome, because such theories frequently offer different predictions about the factors likely to be associated with this outcome.

Which characteristics are likely to be associated with increased vulnerability? M. Stroebe et al. (2007) recently carried out an extensive review of the literature on risk and protective factors in bereavement. Their study showed that this body of work has resulted in some robust findings but also in a number of inconsistencies. A shortcoming of most risk factor research that could explain some of the inconsistencies in the literature is its focus on only one or on a small set of factors. This limitation has an important consequence: Spurious results may be reported due to the confounding effects of other variables. For example, it may be the case that the—supposedly—salutary effects of religious beliefs are in fact not due to the nature of these beliefs but to their relationship with being part of a supportive church community (i.e., people who are part of such a community are more likely to endorse religious beliefs). Only when both variables are included simultaneously in one analysis would this become clear. A study by Wijngaards-de Meij et al. (2005), which looked at predictors of grief and depression in a sample of bereaved parents, illustrates this point. These researchers examined a large number of predictors both separately

(i.e., univariately) and simultaneously (i.e., multivariately). This investigation revealed differences between magnitude and significance of the contribution of several predictors, when the multivariate analyses were compared with the univariate analyses. For example, both the age of the parent and the child were positively related to grief when examined separately, but the age of the parent ceased to be a significant predictor when examined simultaneously with the age of the child (and a number of other variables). This finding has important implications for early intervention, suggesting that the age of the deceased child, but not the age of the parent, should be the focus of attention. Whereas a few researchers have looked at multiple predictors in single investigations (e.g., Kersting et al., 2007; Schulz, Boerner, Shear, Zhang, & Gitlin, 2006; Wijngaards-de Meij et al., 2005), we know of no study that has simultaneously examined a wide variety of predictors.

Another shortcoming in the risk literature concerns the selection of dependent measures. First of all, grief and depressive symptoms have often been used as interchangeable concepts to measure bereavement outcome. However, a number of researchers have convincingly demonstrated that the two can and should be distinguished (e.g., Prigerson et al., 1995; Wijngaards-de Meij et al., 2005). Secondly, some important outcomes have been notably absent from the literature. One of the foremost among these is emotional loneliness, which has been shown to be potentially critical in the context of bereavement: the impact of marital bereavement on health and well-being (including suicidal ideation) was found to be mediated by emotional loneliness (M. Stroebe, Stroebe, & Abakoumkin, 2005; W. Stroebe, Stroebe, Abakoumkin, & Schut, 1997). To our knowledge, only two studies have examined factors that might influence feelings of emotional loneliness. W. Stroebe et al. (1997) showed that, contrary to popular belief, social support does not reduce emotional loneliness. Van Baarsen, van Duijn, Smit, Snijders, and Knipscheer (1997) demonstrated that the presence of favorable conditions, such as good health and high self-esteem, resulted in lower levels of emotional loneliness in a sample of conjugally bereaved older adults. Nevertheless, knowledge about predictors of emotional loneliness remains scarce, which is worrisome, because about a third of the conjugally bereaved show high stable levels of emotional loneliness for years after their loss (van Baarsen et al., 1997).

Another potentially critical variable that has received relatively little attention is positive affect, despite the general influence of the positive psychology movement and its contention that scientists should focus on such variables. A growing body of evidence has shown the beneficial effects of positive affect, including its ability to buffer people against the effects of negative emotions in the aftermath of crises (Fredrickson, Tugade, Waugh, & Larkin, 2003). Several studies have also found positive affect to be a predictor of long-term bereavement outcome, independent of its concurrent association with depression (Bonanno & Keltner, 1997; Keltner & Bonanno, 1997; Moskowitz, Folkman, & Acree, 2003; Ong, Bergeman, & Bisconti, 2004). For example, in a sample of recently bereaved older adult widows, Ong et al. reported that the associations between daily stress and depressive symptoms were weakened when positive emotions were also present. The unique predictive power of positive affect evident in the above studies is in line with the dominant bi-dimensional affect approach, which posits that positive and negative emotions are independent (Reich, Zautra, & Davis, 2003).

Finally, researchers often assume that risk factors do not change during the period of observation in longitudinal studies, probably because they are conceptualized as “independent variables” in the analyses (W. Stroebe & Schut, 2001). However, this assumption may often be unjustified. For example, it is possible that social support fluctuates (e.g., overreliance on support early on may bring about withdrawal of support later on). Factors that can be assumed to change over the course of time should be assessed repeatedly during the observation period.

In summary then, it is important to approach the investigation of risk factors by examining multiple potential variables simultaneously, by including grief specific as well as different generic measures of adjustment, and by measuring fluctuating factors repeatedly over the course of bereavement in a longitudinal investigation.

In the current study, several strategies were adopted to carry out these necessary improvements. First, multiple potential risk factors were included simultaneously in a multivariate analysis. Second, factors that were assumed to fluctuate were measured at different time points. Third, data were analyzed in multilevel regression models, which allow inclusion of these so-called time-dependent factors (Hox, 2002). Finally, grief and depression

measures were included as well as emotional loneliness and positive affect as dependent variables, to gain more insight into potentially different patterns associated with these diverse phenomena.

Method

Participants

This investigation was part of a larger study that looked at the efficacy of an e-mail based writing intervention for bereaved people. Participants were recruited in two ways: (a) via the Internet, through websites, forums, and e-mail groups that focus on bereaved persons, and (b) via organizations and support groups for the bereaved. To be included in the study, people had to meet the following criteria at the time of registration: (a) at least 18 years of age, (b) native English speaker, (c) having experienced the death of a first-degree relative, and (d) being significantly distressed by this death. 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. Participants were randomly assigned to receive or not receive the intervention (i.e., to the experimental or control condition respectively).¹ Only data from participants who were assigned to the control condition were included in the present study. Further criteria for inclusion were that the loved one had died no more than three years previously and that complete data were available at the first measurement point. The final sample consisted of 195 bereaved individuals. Background and loss characteristics are summarized in Table 1.

Procedure

Participants were sent e-mails inviting them to fill in questionnaires online at three points in time: immediately and 3 and 6 months after registering for the study. Questionnaires measured background and loss-related variables and aspects of mental and physical health,

¹Participants assigned to the control condition were offered the opportunity to participate in the intervention after answering the last set of questionnaires following the end of their participation in the study.

TABLE 1 Background and Loss Characteristics of the Sample at T1 (N = 195)

Characteristic	N (%)
Background characteristics	
Gender	
Men	15 (7.7)
Women	180 (92.3)
Age (in years) (<i>M</i> , <i>SD</i>); minimum–maximum	41.50 (10.96); 19–79
Education (highest level of schooling)	
Primary school/Elementary school	0 (0.0)
Secondary school/High school (not finished)	5 (2.6)
Secondary school/High school (finished)	24 (12.3)
Some post-secondary school	41 (21.0)
College diploma or equivalent	48 (24.6)
University degree	45 (23.1)
Postgraduate degree	32 (16.4)
Loss characteristics	
Deceased	
Partner	72 (36.9)
Child	69 (35.4)
Parent	40 (20.5)
Sibling	14 (7.2)
Cause of death	
Natural causes	130 (66.7)
Accident/Homicide	44 (22.6)
Suicide	21 (10.8)
Time from loss (in years) (<i>M</i> , <i>SD</i>)	
<3 months	41 (21.0)
>= 3 months and <6 months	31 (15.9)
>= 6 months and <9 months	24 (12.3)
>= 9 months and <12 months	20 (10.3)
>= 12 months and <18 months	39 (20.0)
>= 18 months and <24 months	23 (11.8)
>= 2 years and <= 3 years	17 (8.7)

personality and coping behavior. Up to two reminder e-mails were sent if participants failed to respond. Participants who did not respond to the reminder e-mails or who only filled in part of the questionnaires at a certain measurement point were not sent an invitation to fill in questionnaires at the next measurement point. The attrition rate was 27.2% over this 6-month period. A logistic regression analysis was performed with dropout as the dependent variable and the predictor and outcome variables (of the regular

analyses) as independent variables in order to check for differences between completers and non-completers. According to the Wald criterion, only emotional loneliness reliably predicted dropout: completers experienced less emotional loneliness than non-completers, $\chi^2(1, N=195) = 8.30, p < .01$.

Measurement Instruments

In selecting the risk factors to be included in our study we decided to leave out all factors that only apply in the case of specific types of bereavement, in order not to limit investigation to certain types of bereavement. Examples of such factors are caregiver characteristics (which would have limited our sample to those persons who had been the caregiver of the person who died) and number of remaining children (which has been identified as a risk factor in bereaved parents and therefore would have limited our sample to this group). The final selection was restricted to those risk factors that have been studied most extensively, to investigate which ones would hold up in a multivariate analysis.

Bereavement-related predictors were kinship (partner/child/parent/sibling), cause of death (natural causes/accident or homicide/suicide), (un)expectedness (measured on a 5-point scale, from *totally expected* to *totally unexpected*), and time since death.

Intrapersonal predictors were age, gender, education level (measured on a 7-point scale), previous significant losses, religiosity, spirituality, attachment anxiety, attachment avoidance, and neuroticism.

With regard to previous significant losses, a distinction was made between participants who had/had not already lost a first-degree relative to death (i.e., before the death of the person on which this study focused). Religiosity and spirituality were measured separately, each with one item: "How religious/spiritual a person would you describe yourself to be?" Answers were given on a 5-point scale ranging from 1 (*not at all religious/spiritual*) to 5 (*very religious/spiritual*). Attachment was measured using the Experiences in Close Relationships—Revised Questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000). The ECR-R items appear to be written for people in 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 (e.g., “My partner only seems to notice me when I’m angry” was changed to “Others only seem to notice me when I’m angry”). Cronbach’s alpha for both attachment anxiety and attachment avoidance ranged from .93 to .94, and test–retest reliability was .73 to .84 for attachment anxiety and .76 to .83 for attachment avoidance. Neuroticism was measured using the 8-item subscale of the Big Five Inventory (BFI; John & Srivastava, 1999). In this study, Cronbach’s alpha was .81.

Social predictors were social support, current living arrangements (alone vs. with others), and professional help seeking. Social support was assessed with a four-item scale of perceived social support. This scale asked two questions about social support from family members and the same two questions about social support from 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 were “a great deal,” “quite a bit,” “some,” “a little,” “not at all,” and “not applicable.” Cronbach’s alpha ranged from .87 to .92, and test–retest reliability was .60 to .74.

Environmental predictors were being a practicing member of an organized religion, financial deterioration (deterioration vs. no deterioration after the loss), current financial situation (insufficient vs. sufficient means), paid job, medication use (for anxiety, mood, or sleep), and significant events around time of death.

It has been suggested that adult attachment style may be susceptible to change over time, especially after major life events (Davila & Cobb, 2004). Social support is another variable that has been assumed to fluctuate over time (W. Stroebe & Stroebe, 1996). For this reason attachment anxiety, attachment avoidance, and social support were measured repeatedly over the course of our investigation. We also argued that the receipt of professional help and the use of medication might change over time. These variables were therefore also assessed at multiple time points. All other predictors were measured once, at the first measurement moment.

DEPENDENT VARIABLES

Grief reactions were measured using nine items that were formulated on the basis of the criteria for complicated grief proposed

for *DSM-V* (Prigerson, Vanderwerker, & Maciejewski, 2008): (a) I have felt myself longing and yearning for my [...]; (b) I have felt bitter over my [...]'s death; (c) I have felt that life is empty or meaningless without my [...]; (d) I have felt that moving on with my life (for example, making new friends, pursuing new interests) is difficult for me; (e) I have had difficulty trusting people; (f) I have had difficulty accepting the death of my [...]; (g) I have felt emotionally numb (e.g., detached from others); (h) I have felt that the future holds no meaning or purpose without my [...]; and (i) I have felt on edge, jumpy, or easily startled. The blanks were filled in with the appropriate relationship word (e.g., son, partner, sister etc.). It has been shown that these nine 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 1 (*never*) to 5 (*all of the time*). Cronbach's alpha ranged from .86 to .91, and test-retest reliability was .66 to .80.

Depressive symptoms were assessed using the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). In this study, Cronbach's alpha ranged from .90 to .94, and test-retest reliability was .60 to .76.

Positive emotions were 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 .91 to .95, and test-retest reliability was .56 to .71.

Emotional loneliness was measured using the following two items: (a) I feel lonely even if I am with other people, and (b) I often feel lonely (W. Stroebe et al., 1997). Participants indicated their (dis)agreement with these statements on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Cronbach's alpha ranged from .80 to .87, and test-retest reliability was .50 to .62.

The four dependent variables were measured at all three points in time.

Analyses

A multilevel modeling strategy was adopted for this study. Longitudinal data can be viewed as multilevel data, with repeated measurements nested within individuals. In our 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. Amongst other advantages, a multilevel approach allows us to add time-varying predictors to our models. Furthermore, 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). Finally, 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, multilevel analysis leads to unbiased estimates. Multilevel modeling was implemented through MLWiN, Version 2.0.

Continuous predictors were centered on their means and categorical predictors were dummy-coded. For each of the outcome variables a model (Time model) was constructed 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 predictors were added to the model (Predictor model). Because of the large number of predictors, this was done in a two-step fashion. First, the predictors were divided into three groups following the integrative risk factor framework by M. Stroebe et al. (2006): bereavement-related predictors, personal predictors, and social/environmental predictors.² The effects of the variables of each of the three predictor groups were then examined in turn, estimating separate predictor models for each predictor group. In the second step, from each of the separate models run in the first step, only the significant predictors were combined in a final predictor model.

The explained variance (i.e., the part of the variation in the outcome measure that can be explained by the predictors) was calculated following recommendations by Hox (2002).

Finally, we checked whether the predictors that were included as time-varying variables in our analyses were indeed subject to change over time. This was done by constructing a model for each of these predictors containing an intercept term, Time (i.e., time

²Social and environmental risk factors were combined into one predictor group to be in line with the risk factor framework developed by M. Stroebe et al. (2006) and because of overlapping variance between the two categories (e.g., between “being a practicing member of an organized religion” and “social support” and between “current living arrangements” and “current financial situation”).

since registration for the study) as a linear predictor and Time \times Time as a quadratic predictor.³

Results

The results of the multilevel analyses are presented in Tables 2 through 6. As can be seen in these tables, participants' mental health improved over time: grief, depression and emotional loneliness decreased over the study's 6-month period while positive mood increased. Only for grief was prediction improved by adding a quadratic trend for time: data showed that grief decreased more between the first and second measurement moment than between the second and third measurement moment.

Table 2 shows that between 24% and 27% of the variance in the outcome measures was explained by the three predictor groups combined.⁴ Intrapersonal predictors (such as adult attachment style) explained most of the variance in bereavement outcome, whereas bereavement-related predictors (such as expectedness of the death) explained the least variance. Even though the total amount of explained variance was very similar between the outcome measures, there were notable differences in the amount of variance that was explained by each predictor group, especially between positive mood and emotional loneliness. Bereavement-related predictors did not explain any of the variance in positive mood, whereas they explained 7% of the variance in emotional loneliness. Intrapersonal variables, on the other hand, were far more important in predicting positive mood (26% explained variance) than emotional loneliness (16% explained variance).

Regarding the specific predictors that significantly contributed to the explanation of variance in mental health, Table 3 shows both a number of similarities as well as disparities between the outcome measures. As discussed in the previous paragraph, bereavement-related predictors contributed to the experience of negative

³Time \times Time was added as a quadratic predictor to capture any non-linear relationship that might exist between time and the dependent variables and thereby improve on the model.

⁴The explained variance of the three predictor groups combined (shown in the last column of Table 2) is less than the sum of the explained variance of the three predictor groups separately (shown in the first three columns of Table 2). This is due to dependencies between predictors (i.e., variance that is shared by the predictor groups).

TABLE 2 Explained Variance of Grief, Depressive Symptoms, Emotional Loneliness, and Positive Mood for Predictor Groups

Variable	Bereavement-related predictors (%)	Intrapersonal predictors (%)	Social/Environmental predictors (%)	Total explained variance (%)
Grief	4	19	8	25
Depressive symptoms	2	21	13	27
Emotional loneliness	7	16	11	24
Positive mood	0	26	7	26

emotions but did not influence positive mood. Bereaved persons who had lost someone unexpectedly experienced more grief and depressive symptoms (but not emotional loneliness) than those who had expected the death. The type of lost relationship was predictive of the amount of emotional loneliness (but not the experience of grief or depressive symptoms): the loss of a partner caused more emotional loneliness than the loss of a parent or child.

With regard to the intrapersonal predictors, it is interesting to note that attachment avoidance significantly contributed to the prediction of all four outcome measures, with higher levels of attachment avoidance being related to worse mental health. In contrast, attachment anxiety only predicted emotional loneliness, with higher levels of attachment anxiety relating to more emotional loneliness. Neuroticism showed an opposite profile: it did not significantly contribute to the prediction of emotional loneliness, but it was related to all other outcome measures, with higher levels of neuroticism being related to worse mental health. Only positive mood was predicted by spirituality: more spiritual persons experienced more positive emotions.

Of the various social and environmental predictors that were investigated, those that were related to financial aspects were significantly predictive of negative, but not of positive emotional states: people whose income declined as a result of the loss or who were lacking in financial means experienced more grief and emotional loneliness and more depressive symptoms respectively.⁵

⁵The relationship between grief and financial situation deterioration almost reached significance ($p = .051$).

TABLE 3 Bereavement-Related Predictors of Grief, Depressive Symptoms, Emotional Loneliness, and Positive Mood

Variable	Grief		Depressive symptoms		Emotional loneliness		Positive mood	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Time	-0.142***	0.024	-0.214***	.036	-0.024*	0.012	0.087**	0.029
Time × Time	0.005*	0.002	-	-	-	-	-	-
Kinship ^a								
Parent	-1.588	1.463	-0.396	2.133	-1.276*	0.615	0.676	1.594
Child	0.369	1.258	-1.499	1.834	-2.424***	0.529	1.652	1.370
Sibling	-0.463	2.215	-4.006	3.235	-1.092	0.936	1.226	2.418
Cause of death ^b								
Suicide	2.669	1.771	3.206	2.581	0.652	0.744	-2.282	1.925
Accident/Homicide	1.056	1.416	0.751	2.067	0.033	0.596	-1.427	1.544
(Un)expectedness	0.888*	0.426	1.251*	0.621	0.308	0.179	-0.578	0.464
Time since death	-0.927	0.738	-1.795	1.076	-0.300	0.310	1.458	0.803

^a(0 = partner).

^b(0 = natural causes).

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

TABLE 4 Intrapersonal Predictors of Grief, Depressive Symptoms, Emotional Loneliness, and Positive Mood

Variable	Grief		Depressive symptoms		Emotional loneliness		Positive mood	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Time	-0.165***	0.019	-0.258***	0.029	-0.030**	0.010	0.126***	0.023
Time × Time	0.006**	0.002	-	-	-	-	-	-
Gender (0 = male, 1 = female)	5.722**	1.770	4.248	2.530	1.015	0.767	-3.829*	1.792
Age	0.017	0.048	0.071	0.069	0.015	0.021	-0.062	0.049
Educational level	-0.403	0.353	-0.337	0.505	0.076	0.154	0.006	0.359
Previous significant losses	1.762	1.006	1.108	1.440	0.796	0.438	-0.288	1.022
Religiosity	0.115	0.474	-0.104	0.677	-0.091	0.206	-0.308	0.480
Spirituality	-0.789	0.479	-0.485	0.686	-0.144	0.209	1.287**	0.487
Attachment anxiety	0.043**	0.017	0.074**	0.025	0.035***	0.008	-0.004	0.019
Attachment avoidance	0.069***	0.017	0.136***	0.026	0.038***	0.008	-0.144***	0.019
Neuroticism	0.174*	0.077	0.360**	0.110	0.046	0.034	-0.292***	0.078

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

TABLE 5 Social/Environmental Predictors of Grief, Depressive Symptoms, Emotional Loneliness, and Positive Mood

Variable	Grief		Depressive symptoms		Emotional loneliness		Positive mood	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Time	-0.175***	0.019	-0.273***	0.029	-0.034**	0.011	0.133***	0.024
Time × Time	0.006**	0.002	-	-	-	-	-	-
Social support	1.635***	0.345	2.734***	0.517	0.663***	0.174	-2.200***	0.412
Professional help seeking	-0.372	0.640	-0.299	0.981	-0.366	0.339	-0.021	0.784
Medication use	-1.183	0.782	-2.638*	1.169	-0.280	0.392	1.656	0.930
Current living arrangements	-0.180	1.179	-2.418	1.620	-0.434	0.488	0.404	1.260
Being a practicing member of an organized religion	0.889	1.050	2.365	1.447	0.666	0.438	-2.073	1.127
Financial situation deterioration	2.380*	1.192	3.157	1.638	1.501**	0.493	-2.468	1.274
Adequacy of financial situation	-0.817	1.245	-4.008*	1.715	-0.707	0.518	-0.225	1.335
Paid job	0.705	1.082	1.312	1.488	0.611	0.449	0.225	1.157
Significant events around time of death	-0.581	1.029	-0.535	1.416	0.180	0.428	0.893	1.102

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

TABLE 6 Final Model

Variable	Grief		Depressive symptoms		Emotional loneliness		Positive mood	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Time	-0.175***	0.019	-0.269***	0.029	-0.032**	0.010	0.132***	0.023
Time × Time	0.006*	0.002	-	-	-	-	-	-
Bereavement-related Kinship (0 = partner)								
Parent	-	-	-	-	-1.219*	0.566	-	-
Child	-	-	-	-	-1.588***	0.464	-	-
Sibling	-	-	-	-	-0.166	0.821	-	-
(Un)expectedness	1.214***	0.324	1.133*	0.464	-	-	-	-
Intrapersonal								
Gender (0 = male, 1 = female)	5.878***	1.694	-	-	-	-	-3.656*	1.786
Spirituality	-	-	-	-	-	-	1.033*	0.438
Attachment anxiety	0.025	0.017	0.047	0.025	0.034***	0.008	-	-
Attachment avoidance	0.064***	0.017	0.115***	0.026	0.033***	0.008	-0.124***	0.020
Neuroticism	0.157*	0.072	0.329**	0.103	-	-	-0.266***	0.075
Social/Environmental								
Social support	1.134**	0.351	1.785***	0.535	0.237	0.177	-1.230**	0.397
Medication use	-	-	-2.191*	1.112	-	-	-	-
Financial situation deterioration	1.845†	0.947	-	-	1.077*	0.431	-	-
Adequacy of financial situation	-	-	-3.316*	1.416	-	-	-	-

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Social support predicted all outcome variables (lower levels of perceived social support being related to worse mental health) except for emotional loneliness.

A few predictors that contributed significantly to the explanation of variance in mental health when examined within their own predictor group, ceased to have a significant effect when examined simultaneously with predictors from other predictor groups: attachment anxiety was no longer predictive of grief and depressive symptoms, and social support was no longer predictive of emotional loneliness.

Contrary to expectations, only social support was subject to change over time, increasing over the course of our study. Attachment style remained stable as did the percentage of participants who were receiving professional help and taking medications.

Discussion

This study provided information about predictors of adjustment of persons to the loss of a loved one. It did so while addressing a number of methodological shortcomings identified in the risk literature. First of all, instead of focusing on only one or on a small set of factors, multiple potential risk factors were simultaneously examined. This decreases the chance of reporting spurious results. Secondly, a bereavement-specific (grief), as well as different generic measures of adjustment (depressive symptoms, emotional loneliness, and positive mood) were included. Thirdly, instead of assuming that risk factors are stable during the period of observation, factors that were assumed to be subject to change were measured repeatedly over the course of our project. We first describe our findings in the context of these shortcomings in previous investigations. Then we discuss the various risk factors that our study identified and address some of the limitations of our study. Finally, we offer some suggestions for further research.

Our results clearly indicate the importance of examining variables from different predictor groups (bereavement-related, intrapersonal, and social/environmental predictors) simultaneously. By looking at the association between symptoms and multiple predictive factors at the same time, we were able to show differences in the magnitude and significance of the contribution of several predictors, indicating their confounding influences. For example,

whereas attachment anxiety contributed significantly to the prediction of grief and depressive symptoms when examined within the group of intrapersonal predictors, it failed to reach significance when combined with predictors from the two other predictor groups. We return to this finding later on when discussing our results with regard to adult attachment style.

The inclusion of diverse measures of adjustment allowed us to compare these measures in terms of risk factors. Our results indicate clear variations between outcome measures in this respect, although there are also commonalities. Emotional loneliness shows a distinctive pattern: Being high in anxious attachment and having lost a partner is related to more intense feelings of emotional loneliness, while these variables do not predict any of the other outcome variables. Social support, on the other hand, does not influence emotional loneliness, whereas it does predict grief, depressive symptoms, and positive mood. Furthermore, our results show that financial aspects are predictive of negative outcome measures, but not of positive mood. Positive mood, in contrast, is predicted by spirituality. The differences that were identified in risk profiles between negative emotions and positive mood are in line with the arguments brought by contemporary researchers, as reported in the introduction. In the same vein, the fact that grief and depressive symptoms are to some extent predicted by different variables—although the difference is not as pronounced as in some studies (e.g., Wijngaards-de Meij et al., 2005)—lends further credence to the notion that depression and grief are indeed two different concepts, as discussed earlier.

Whereas it is important in principle to assess fluctuating factors repeatedly over the course of a project, it turns out that most of the predictors that we assumed would be subject to change over time were in fact stable in our study. This is perhaps less surprising in the case of trait-like variables such as attachment styles. But it is puzzling that the receipt of professional help and the use of medication did not change either. This latter finding does suggest that the stability of most variables in our study might have been due to the fact that we observed people only for 6 months, a relatively short period. Thus, in our view, investigators should continue to take fluctuation into account in future research.

Turning to the various risk factors identified in this study, it is interesting to note that bereavement-related predictors do not play

a very important role, except in the case of emotional loneliness, which is predicted by partner loss. This latter finding is in line with Weiss's relational theory of loneliness, which posits that the loneliness of emotional isolation appears in the absence of a close emotional attachment (Weiss, 1975): for most people their romantic partner constitutes their closest emotional attachment. With respect to the other outcome measures, both grief and depressive symptoms are only—and to a small extent—predicted by the (un)expectedness of the death. Positive mood bears no relation at all to bereavement-related predictors. Although bereavement-related predictors have traditionally been linked to bereavement outcome, we are not the first to find a lack of significant contribution (e.g., Boelen, van den Bout, & van den Hout, 2003). One explanation for this might be that participants were selected via support groups and organizations for the bereaved. It is possible that people from such groups and organizations are on average more distressed by their bereavement than people who are not a member of such groups or organizations. Furthermore, it was stated explicitly that people had to be significantly distressed in order to participate in our study. Thus, participants may have been “preselected” on the bereavement-related predictors that were measured, thereby decreasing their impact. Such selective participation is, however, quite common in bereavement research (M. Stroebe & Stroebe, 1989). It remains critically important to acknowledge and to assess the significance of potential biases associated with selection in all investigations.

To a certain extent, the findings on adult attachment style and neuroticism are in line with previous research, especially work done by Wijngaards-de Meij et al. (2007a, 2007b). As in these previous studies, we found that when these intrapersonal variables were examined simultaneously, both attachment dimensions explained a unique part over and above neuroticism in grief and depressive symptoms.⁶ Our replication of these results is especially noteworthy, because a different (and more reliable) measure of

⁶In considering the intrapersonal and social and environmental predictors, it is important to keep in mind that this study focused on bereaved persons only and the differences between subgroups among them. Given this focus, we cannot be sure whether the variables that turned out to be important significant predictors of the general (i.e., non-grief specific) outcome measures would also be significant predictors among non-bereaved samples of people. Clearly, this point does not apply to our grief measure.

adult attachment style was used. Furthermore, we extended earlier findings by examining the effect of adult attachment style and neuroticism on two new outcome measures—emotional loneliness and positive mood—and with different types of loss. We demonstrated that emotional loneliness is predicted by both attachment dimensions, but not by neuroticism, whereas positive mood is predicted by attachment avoidance and neuroticism. However, our results also deviate from the abovementioned research, in that the effect of attachment anxiety on grief and depressive symptoms disappeared when it was examined together with social support. Further probing of the relationships between these variables is to be recommended.

It is interesting to note that spirituality predicted positive mood, but none of the other outcome measures. Indeed, this reflects a pattern found among non-bereaved sample. Kim, Seidlitz, Ro, Evinger, and Duberstein (2004) reported that, controlling for religiousness, spirituality was associated with emotional well-being and that it was primarily related to positive but not to negative emotions. However, this does not rule out the possibility that there may also be a bereavement-specific component to this relationship. Insofar as being a spiritual person incorporates certain beliefs (e.g., the belief in an afterlife where the deceased one awaits you or a belief that the deceased is still present), it is reasonable to expect that this would add to the experience of positive emotions during bereavement. Most studies that have looked at the effect of religion or spirituality on bereavement outcome have used religious affiliation, religiosity, and spirituality as interchangeable concepts (for a review, see Becker, Xander, & Blum, 2007). Given the consensus of opinion that they are not the same, a strong feature of our study was that differentiation between these three aspects was made (although each was measured with a single item). Further research needs to replicate these findings with more reliable measures and further exploration of the general versus bereavement-specific nature of the relationship between spirituality and positive mood is also called for.

We also reported that the amount of (perceived) social support predicts grief, depressive symptoms, and positive mood. These results are in line with a number of studies that have shown social support to be related to bereavement outcome, with people who receive more support having more favorable outcomes

(e.g., W. Stroebe et al., 2005). Note, however, that social support is a general (not bereavement-specific) risk factor, benefitting the bereaved and non-bereaved alike (W. Stroebe et al., 2005). The fact that social support does not predict emotional loneliness is also in accordance with previous research (W. Stroebe et al., 1997). Again, Weiss's relational theory of loneliness can be called on to explain this finding (Weiss, 1975). In this theory, Weiss draws a fundamental distinction between emotional and social loneliness and argues that the two types of loneliness cannot compensate for each other. The loneliness of social isolation can only be helped by access to an engaging social network, whereas emotional isolation can only be remedied by the integration of another emotional attachment or the reintegration of the one who has been lost. In the case of bereavement the latter can be understood as a symbolic reintegration (i.e., continuing bonds).

We found that people who were taking medications for anxiety, mood, or sleep problems experienced more depressive symptoms than people who did not take such medications. It seems plausible that feelings of depression led to medication use, but it is interesting to note that the relationship with medication use held only for depressive symptoms and not for grief. This may indicate that bereaved people and/or their doctors are of the opinion that intense grief symptoms cannot or should not be treated with pharmacological aids. On the other hand, it is also possible that medication was indeed provided, but was not effective in relieving grief symptoms (Hensley, 2006).

Our results show that both loss of and lack of money were associated with poor bereavement outcome. The loss of financial resources was related to grief and emotional loneliness. The relationship with grief makes sense, in that the loss of financial resources can be understood as a secondary loss that adds to the salience of the first loss. It is unclear why people who experience financial deterioration also experience more loneliness. An explanation in terms of an association between loss of financial resources and loss of a partner (given that both are related to emotional loneliness) cannot apply, because we controlled for this possibility in our analysis when we examined type of lost relationship and financial deterioration simultaneously. The loss of financial resources is not related to depressive symptoms, but depressive symptoms are determined by lack of finances. Both findings are in agreement

with research that shows that people easily adapt to changes (either for the better or for the worse) in their financial situation (e.g., Diener, Suh, Lucas, & Smith, 1999), but that economic strain predicts depressive symptoms (e.g., Wadsworth, Raviv, Compas, & Connor-Smith, 2005).

In discussing our findings, we have already addressed a number of shortcomings of our study. At the same time, the present study illustrates the usefulness of a multivariate approach to the investigation of predictors and it provides strong support for the inclusion of bereavement-specific as well as more general outcome measures. We also identified a number of situational and personal characteristics associated with vulnerability. For example, persons who were more avoidant in their style of attachment had poorer bereavement outcomes, regardless of their level of neuroticism. Future research should focus on replicating and further exploring such findings. Two major lines of investigation emerge: First of all, because we did not want to limit ourselves to certain types of bereavement, we focused on predictors that in principle apply to all the bereaved. However, predictors that are only relevant to specific types of bereavement may nevertheless be important in those specific situations. Thus, investigation needs to be extended to such variables, and to examining their contribution and relative importance compared to the ones already investigated. Second, we did not include any process measures (e.g., rumination or other types of coping) in these analyses. Extension of our research to include such measures is important for two reasons. By examining process measures alongside the predictors that turned out to be important in our study, one could gain further insight into the pathways through which these predictors become impactful. Moreover, knowledge of these mechanisms would provide us with targets for intervention.

Finally, one has to consider the clinical implications of this study. There are two issues addressed by our research. First, as we mentioned in the introduction, early identification of those who are at risk of suffering lasting health consequences may make it possible to intervene and possibly prevent negative outcomes. And even though few of the risk factors that we pinpointed are easily identifiable, it would be possible to develop a screener questionnaire based on these factors. However, additional research would be needed, for example, to establish how these factors should be

combined in such a measure, to allow one to predict who benefits most from interventions.

A second point concerns the possibility to target risk factors in intervention. Clearly, interventions can only be aimed at risk factors that easily lend themselves to change. Most of the risk factors that we identified cannot be changed (e.g., gender, (un)expectedness of the death) or might be difficult to change (e.g., neuroticism, attachment style, adequacy of financial situation). More importantly, the fact that these variables moderated the impact of the loss on our dependent measures does not necessarily imply that moderating these factors through intervention would facilitate adjustment to the loss. Future longitudinal research needs to address this issue as well.

It is clear that additional steps need to be taken to translate our research findings into practice. This remains a challenge for both researchers and clinicians. Nevertheless, we consider our study as providing a fruitful starting point, in that it identifies factors that can be subjected to further investigation. What we also hope to have made clear in this article is how research on risk factors should proceed, and how it should best be conducted, for valid results to be obtained.

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