Grief, Depressive Symptoms, and Physical Health Among Recently Bereaved Spouses

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Purpose: Widowhood is among the most distressing of all life events, resulting in both mental and physical health declines. This paper explores the dynamic relationship between physical health and psychological well-being among recently bereaved spouses. Design and Methods: Using a sample of 328 bereaved persons who participated in the “Living After Loss” study, we modeled trends in physical health, somatic symptoms, and psychological well-being over the first year and a half of widowhood. The primary focus is whether physical health at the time of widowhood modifies psychological well-being over time. Results: There were considerable somatic symptoms during the earliest months of bereavement but no major health declines over the first year and a half of bereavement. Those in poor health had initially higher levels of grief and depressive symptoms, but the trajectories or changes over time were similar regardless of health status. Those with poor health at the time of widowhood had significantly higher risks of complicated grief and major depression disorder. Implications: Bereavement requires physical and emotional adjustment, but the psychological trajectory of bereavement may be somewhat universal. Bereavement support ought to include a focus on self-care and health promotion in addition to emotional support, especially because those with poor health initially may be most susceptible to prolonged and intense clinical distress. Key Words: Bereavement, Depression, Health, Widowhood, Growth curve modeling, Grief.
loss associated with the death of an intimate partner as well as the shattering of one’s behavioral, social, and economic environments that were once shared by the married couple (Carr & Utz, 2001; Donnelly & Hinterlong, 2010; Ha, 2010; Stroebe & Schut, 2010; Utz, Carr, Nesse, & Wortman, 2002). Managing these two disparate stressors has the potential to suppress one’s immune system (Gerra et al., 2003), which then may decrease overall health and increase mortality risk (Stroebe et al., 2007). A recent meta-analysis reported that widowed persons have an 11% higher risk for mortality when compared with married persons (Manzoli, Villari, M Pirone, & Bocca, 2007).

Extant literature has documented the health benefits associated with marriage (Waite & Gallagher, 2000), as well as the health detriments associated with marital dissolution (Williams & Umberson, 2004). Another body of literature has outlined the pervasive effect that stressful life transitions can have on subsequent morbidity, mortality, and psychological well-being (Miller, 2010). Still, another body of literature has identified potential risk factors for the most severe psychological reactions that sometimes accompany widowhood (Lichten-thal et al., 2004; Lobb et al., 2010). However, much less research has explored how physical health might affect older adults’ ability to adapt to the stresses of widowhood (Telonidis, Lund, Caserta, Guralnick, & Pennington, 2005). Do frail or ill persons experience bereavement in the same way as healthy robust individuals? Are some individuals more susceptible to health declines at the time of widowhood and thus more susceptible to prolonged or heightened bereavement experiences?

Given the strong theoretical and empirical correlation between physical and mental health (Edwards & Cooper, 1988), especially during times of high life stress (Aneshensel, 1992), this analysis explores the dynamics between physical health and psychological well-being among recently bereaved spouses or partners. Past research has suggested that those in poor health may be more susceptible to the intense clinical outcomes, such as prolonged or CG disorders (M. Horowitz et al., 1998), whereas those with the most intense grief experiences have elevated risks of morbidity and mortality (Ott, 2003; Prigerson, Shear, Frank, & Beery, 1997). Very little research has focused on how physical health, as both a static and a dynamic characteristic of the widow(er), may alter one’s bereavement experience. The results that do exist are largely based on small clinical samples or anecdotal evidence from practitioners working with bereaved persons.

This study utilized a community-based sample of older widowed persons to explore the complex relationships between physical health and psychological well-being from approximately two to eighteen months postloss, the time period that captures the most intense health-related changes associated with widowhood (D. A. Lund, Caserta, & Dimond, 1993). The specific research objectives include the following:

Aim 1: To explore how “health” changes during the first year and a half of widowhood.

Aim 2: To explore how (a) physical health at the time of widowhood and (b) changes in physical health that accompany widowhood modify the individual trajectory of grief and depressive symptoms over time.

Aim 3: To explore whether physical health might be a risk factor for clinical outcomes major depression and/or CG.

The first set of analyses, Aim 1, provides a descriptive background of how physical health changes over the first year and a half of bereave-ment. The primary objective is to illustrate the natural or typical responses to spousal loss. Aim 2 explores whether physical health might modify the common fluctuations in psychological distress over time, whereas Aim 3 explores whether physical health might be a characteristic to help identify those persons who are most at risk for the prolonged and intense clinical outcomes following spousal bereavement.

Methods

Data come from “Living After Loss” (LAL), a longitudinal study of older bereaved spouses/partners. Participants completed questionnaires at approximately three (baseline), six, nine, and fifteen months after the spouse’s death. All data were collected between February 2005 and June 2009. In between the three- and six-month data collections, participants completed one of two interventions, each consisting of a 14-week, facilitator-led support group (D. Lund, Caserta, Utz, & de Vries, 2010). The first was a traditional support group focusing exclusively on the emotional needs of the bereaved persons. The second was theoretically based on the “dual process model of coping” (Stroebe & Schut, 2010), which states that bereaved persons should oscillate between loss-oriented and restoration-oriented tasks; this support group
included traditional facilitator-led discussions about loss and grief as well as guest speakers who provided information and training that might help the bereaved readjust their daily life (for instance, household repairs, nutrition, finances, and home safety). Participants were randomly assigned to one of the two intervention conditions.

Sample
The LAL sample included 328 persons who were older than the age of 50 years and whose spouse/partner had died 2–6 months (M = 3.6) prior to completing the baseline questionnaire. Participants were initially identified from vital statistic records maintained by two cities/counties in the western United States (Caserta, Utz, Lund, & de Vries, 2010). A software-based random number generator was then used to select a stratified random sample of potentially eligible widows and widowers. Female deaths were oversampled to ensure enough widowers in the analytic sample. Traumatic or violent deaths (e.g., suicides, homicides, and automobile accidents) were excluded because these deaths often elicit unique bereavement experiences that cannot be adequately addressed in a group-based intervention (Mitchell, Kim, Prigerson, & Mortimer-Stephens, 2004).

A little less than half of the eligible sample agreed to participate in the study, resulting in a sample size of 328. Although the LAL study is based on a random sample of death records, participants likely represent a unique population of persons who were willing to participate in a 14-week support group research as well as complete the research aspect of the LAL study. It is estimated that anywhere from 10% to 42% of widowed persons receive support from an organized group or therapist during the early period of widowhood (Caserta et al., 2010; Levy & Derby, 1992). Of the 328 participants, 84% (n = 274) completed all four questionnaires and more than 90% (n = 298) completed questionnaires for at least two timepoints. Exploratory analyses found that missing data, due to nonresponse and attrition, were random for all variables used in this analysis.

Measures
“Physical Health” was assessed during each of the four surveys to provide a longitudinal profile of physical health. First, we used a single-item self-report measure of global health, ranging from 1 poor health to 7 excellent health. This type of variable is commonly used in survey-based research and is considered an ideal measure of physical health because it captures a subjective or qualitative dimension of one’s perceived health in addition to objective health diagnoses (Ferraro & Farmer, 1999). For a less subjective measure of physical health that may be less tied to one’s psychological well-being at the time of questionnaire completion, respondents also completed a symptom checklist at each of the four timepoints, indicating which types of common health symptoms they experienced over the past month. The checklist contained 19 separate symptoms from which a single-item summary score was calculated, ranging from 0 (no symptoms present) to 19 (all symptoms present). The Pearson correlation between self-reported health and the symptom count was -.45 at baseline (p < .001). The ability to measure physical health in terms of both objective symptoms and subjective appraisals is a unique strength of the analyses.

“Psychological Well-Being” was also measured by two conceptually distinct constructs: “grief” and “depressive symptoms” (Bonanno & Kaltman, 2001; Jacobsen et al., 2010). Grief was assessed by the “Present Feelings” subscale of the Texas Revised Inventory of Grief (TRIG; Faschingbauer, Zisook, & DeVaul, 1987), whereas depressive symptoms were measured using the short form of the Geriatric Depression Scale (GDS; Sheikh & Yesavage, 1986). Both scales were used to identify changes in symptoms throughout the first year and a half of bereavement as well as an individual’s risk for clinical diagnoses of major depression and CG.

The GDS includes 15 items measuring the presence or absence of depressive symptoms (e.g., general satisfaction with life, feelings of happiness, and helplessness). Scores range from 0 to 15, with higher values indicating greater depressive symptoms. The internal consistency was quite high in the LAL baseline sample (α = .84). GDS is an ideal measure because, unlike other commonly used depression indices like the Center for Epidemiological Studies-Depression scale (Radloff, 1977), it was designed explicitly for an old-age population and does not include somatic symptoms, such as loss of appetite and sleep disturbances, which may be confounded with our measures of physical health. Furthermore, previous research has validated cutpoints on the GDS that can be used to
approximate the risk for clinical depression: A score greater than or equal to 5 is suggestive of a major depressive episode, whereas scores above 10 coincide with clinical diagnoses of major depression (Poon & American Psychological Association, 1986). At approximately 15 months postloss, 6% of the LAL sample had GDS scores, indicating that they had probable diagnosis of major depression disorder; 18% had scores indicating a likely depressive episode.

The TRIG is among the most widely used measures of grief (Neimeyer & Hogan, 2001). Based on a five-item Likert response, participants assessed the presence and severity of 13 grief-related symptoms (e.g., I still cry when I think of my spouse). Responses were summed, with scores ranging from 13 (low grief) to 65 (high grief). The TRIG, as calculated with the LAL baseline sample, has high internal consistency (α = .90). The TRIG has been commonly used in research to identify persons at risk of CG (Lobb et al., 2010). Conceptually, CG has been defined by the presence of intense grief reactions that extend past six (Prigerson et al., 1999) or fourteen months postloss (M. J. Horowitz et al., 1997). M. J. Horowitz and colleagues (1997) proposed using a crude median split of TRIG scores at 14 months to identify possible cases of CG (in their clinical sample of n = 70, median = 41), but specificity analyses found a nearly 25% false positive diagnostic rate. Thus, we applied a slightly more stringent cutpoint for the purposes of this analysis. Persons who had scores at the fourth data collection (approximately 15 months postdeath) that were above the median score associated with the baseline assessment (median = 44) were identified as having possible or probable CG. This represents 23% of the LAL baseline sample.

All multivariate analyses control for demographic characteristics, including gender, age (in years), race (White and non-White), education (some college or less, college degree or more), and perceived financial adequacy (not very good, comfortable, and more than adequate). Analyses also control for features of the LAL study design, including where the participant lived (two western cities/counties) and in which of the two intervention conditions s/he participated. The five demographic factors are correlated with both physical health and psychological well-being and thus ought to be controlled to avoid issues of confounding (Carr, 2006). The latter two methodological variables were not expected to affect any of the health-related outcomes (nor did they), but their inclusion allowed us to explore whether the methodological design of LAL may have had an impact on the relationships explored.

Prolonged distress or CG reactions are thought to be influenced by a host of additional risk factors (Lichtenthal et al., 2004; Lobb et al., 2010). To measure the nature of the predeath marital relationship, we included “marital happiness,” a single-item Likert scale measuring the spouse’s assessment of their marital quality, ranging from 1 “very unhappy” to 7 “perfectly happy.” To measure the nature of the death and dying process, we included a dummy variable called “expectedness of death” (0 = not expected; 1 = expected), which was the widow(er)s’ perception of whether they expected the death or not. To measure the amount of interpersonal support received after the death, we included two dummy variables measuring whether the respondent was satisfied with “support from family” and “support from friends.” Cognitive appraisal of the bereavement experience as well as personality and attachment styles may be further predictors of psychological well-being after the loss (Neimeyer, Burke, MacKay, & Stringer, 2010), but such variables were not available in the LAL study.

Analytic Plan

For Aim 1, we documented changes in self-reported physical health, total number of physical symptoms, and a host of individual health symptoms, characterizing both the significance and the direction of change during the first 18 months of bereavement. To minimize the risk of committing a Type I error, given the large number of variables assessed in this analysis (n = 23; refer to Table 1), we imposed the Bonferroni correction to determine statistical significance when interpreting these results (p < .002). Analyses were performed in SPSS 16.0 and STATA 12MP.

For Aim 2, we used multivariate growth modeling to estimate the longitudinal changes in grief and depressive symptoms while controlling for sociodemographic covariates that may confound the relationship. Growth curve analyses use “full information maximum likelihood” to model parameter estimates, meaning that we utilized the full LAL sample (n = 328) despite missing data from attrition or nonresponse. The LAL sample had less than 3% missing data on any given variable and less than 15% attrition over the course of
the 18-month panel. Growth curve analyses are ideal to analyze trajectories because they allow for variation in timing of repeated measures. Although LAL participants completed questionnaires at fairly regular intervals (e.g., before intervention, immediately following intervention, 3 months after intervention, and 6 months after intervention), the participants’ entry into the study was variable (range: 2 – 6 months postloss, $M = 3.6$). All growth models control for the precise timing of each data collection rather than imposing the idealized or average timepoints associated with the study design.

The generalized equation for a growth model is (Raudenbush & Bryk, 2002):

$$Y_{it} = \pi_{0i} + \pi_{1i}(t) + e_{it}$$  \hspace{1cm} (1)

where the outcome, $Y_{it}$, represents the observed psychological well-being at time $t$ for individual $i$. The intercept, $\pi_{0i}$, represents the psychological well-being of person $i$ at time 0 (widowhood). The slope, $\pi_{1i}$, represents the growth rate or the expected change in psychological well-being over a given unit of time ($a$) for person $i$. The error term, $e_{it}$, is random variation in individual growth trajectories. It is assumed that both the slope ($\pi_{1i}$) and the intercept ($\pi_{0i}$) may vary across individuals; thus, a series of person-level equations are simultaneously estimated to account for this variation:

$$\pi_{0i} = \beta_{00} + \beta_{01}X_i + r_{0i}$$  \hspace{1cm} (2)

$$\pi_{1i} = \beta_{10} + \beta_{11}X_i + r_{1i}$$  \hspace{1cm} (3)

$X_i$ represents measured characteristics of the individual (i.e., physical health status and control variables), whereas $\beta_{01}$ and $\beta_{11}$ represent the effects of $X_i$ on individual growth parameters, and $r_i$ represents random effects unaccounted for by model specifications. For purposes of this analysis, we

<table>
<thead>
<tr>
<th>LAL survey</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>Statistically significant change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grief (13–65, low to high)</td>
<td>42.5</td>
<td>39.0</td>
<td>38.3</td>
<td>36.8</td>
<td>a</td>
</tr>
<tr>
<td>Depressive symptoms (0–15, low to high)</td>
<td>3.8</td>
<td>3.1</td>
<td>2.9</td>
<td>2.8</td>
<td>a</td>
</tr>
<tr>
<td>General health (1–7, poor to excellent)</td>
<td>5.2</td>
<td>5.2</td>
<td>5.1</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Total no. of symptoms (out of 19 listed below)</td>
<td>4.4</td>
<td>3.4</td>
<td>3.1</td>
<td>2.9</td>
<td>a</td>
</tr>
</tbody>
</table>

Health symptoms that decreased
- Difficulty sleeping (%)<br>63 53 45 45  a
- Very tired (%)<br>54 41 35 39  a
- Problems concentrating (%)<br>53 35 29 22  a
- Loss of appetite (%)<br>51 23 19 16  a
- Chest pain (%)<br>14 9 8 8  a
- Rapid heart beat (%)<br>12 9 7 4  a

Health symptoms that increased
- Joint pains (%)<br>33 38 44 43  a
- Bladder or urinary problems (%)<br>14 20 19 22  a

Health symptoms that did not change
- Muscle aches (%)<br>30 36 34 35 | 35 |
- Headaches (%)<br>15 13 15 12 | 12 |
- Constipation (%)<br>14 17 16 15 | 15 |
- Blurred vision (%)<br>14 10 12 11 | 11 |
- Dizzy (%)<br>13 12 12 11 | 11 |
- Abdominal pain (%)<br>11 7 8 9 | 9 |
- Sweating (%)<br>9 11 8 11 | 11 |
- Difficult breathing (%)<br>7 7 7 8 | 8 |
- Skin rash (%)<br>8 6 4 5 | 5 |
- Hair loss (%)<br>6 7 9 8 | 8 |
- Difficulty swallowing (%)<br>5 5 8 7 | 7 |

Notes: *Statistical tests were used to assess within-factor changes for each variable (e.g., repeated measures analysis of variance, pairwise $t$ tests, and fixed effects logit models predicted by time dummies). The choice of the statistical test depended on whether the variable was continuous or binary and whether we wanted to know an overall trend across all four timepoints or changes across two isolated timepoints. Given the number of trends displayed in the table ($n = 23$ variables), we applied the Bonferroni multiple comparison adjustment (.05/23) so that only those findings with $p < .002$ are marked as statistically significant trends over time.
were most interested in whether one’s physical health \((X_t)\) affects either the intercept \((\pi_0)\) or the slope \((\pi_1)\) of psychological well-being over time. We modeled slope \((\pi_1)\) as a quadratic function, given a priori theoretical assumptions that bereavement is not a linear process but instead a long-term process in which recovery occurs more rapidly at first and then subsides over time as one begins to reach their “baseline” or new-normal levels of the outcome being assessed. All models were estimated in SAS using the “PROC MIXED” commands. All models were estimated using an autoregressive \((a)\) covariance structure, which assumes that measures have homogenous variances over time and that measures further apart have lower correlations than those that were measured closer together.

For Aim 3, we estimated a series of multivariate regression models exploring whether the risk of clinical diagnoses could be predicted from the widowed persons’ physical health at baseline. Like the growth curve analyses, these models control for the precise timing of baseline measurements \((2–6\) months postloss, \(M = 3.6\)). These analyses are based on a subsample of 275 persons who returned the final questionnaire and who had complete data for all covariates measured at baseline \((84\%\) of original sample). All models were estimated in SPSS 16.0. All control for the full set of demographic, methodological, and risk factor covariates.

**Results**

As shown in Table 1, self-reported physical health did not significantly change over time among bereaved older adults, whereas the total number of physical health symptoms declined, from an average of 4.5 symptoms to less than three symptoms \((\text{out of 19})\), over the first year and a half of bereavement. Participants most commonly reported sleep disturbances \((63\%)\), general fatigue \((54\%)\), problems concentrating \((53\%)\), and loss of appetite \((43\%)\). Some symptoms such as joint pain and urinary problems increased in prevalence over time \((\text{from } 33\% \text{ to } 43\% \text{ and from } 14\% \text{ to } 22\%, \ p \leq .002\) ), likely attributable to the exacerbation of age-prevalent conditions. Other symptoms decreased over time. For example, sleep disturbances decreased from \(63\% \text{ to } 45\% \) \((p \leq .002)\), and fatigue decreased from \(54\% \text{ to } 39\% \) \((p \leq .002)\); these changes likely represent a decrease in the somatic manifestations of grief \((\text{de Vries, Davis, Wortman, } \& \text{ Lehman, } 1997)\). The most significant changes occurred between 3 and 6 months postloss, affirming our a priori theoretical assumption that the physical symptoms of bereavement may dissipate over time after an initial period of heightened prevalence. Similar to the indicators of physical health, grief and depressive symptoms also followed a decelerating trend over time.

As expected, the bivariate correlation matrix between grief, depressive symptoms, and the two measures of physical health \((\text{not shown})\) produced a number of significant correlations. The Pearson correlation values ranged from \(.11 \text{ to } .47 (p \leq .05)\), suggesting generally that those with better self-reported health or fewer physical health symptoms had significantly lower scores on grief- and depression-related indices. Differences across the matrix suggested that depressive symptoms may be more highly correlated with physical health than grief is, whereas the correlation values between grief and physical health were much lower during the later months of bereavement compared with the earlier months of bereavement. These variations over time and across measurements encourage a more nuanced longitudinal analysis to understand the dynamics of physical health and psychological well-being following the loss of spouse.

Thus, a series of growth models explored whether the two measures of physical health predicted longitudinal changes in grief \((\text{as shown in Table 2})\) or depressive symptoms \((\text{as shown in Table 3})\). Each table presents two models: Model 1 included a single time-invariant measure of physical health assessed at baseline, approximately 3 months postdeath. Model 2 included a time-varying measure of physical health at each of the four time points, approximately 3, 6, 9, and 15 months postdeath. All models measured time precisely for each individual based on when they enrolled in the study \((2–6 \text{ months postloss, } M = 3.6)\).

Across Tables 2 and 3, Level-1 coefficients \((\pi_0, \pi_1)\) reveal the shape of the trajectory measuring grief and depressive symptoms over time. Given a priori theoretical assumptions and earlier empirical findings suggesting that the greatest improvement in psychological well-being occurs early in bereavement and decelerates over time, all models were estimated with a quadratic function for slope \((\pi_1)\). Significant intercept estimates \((\pi_0)\) suggest that individuals start their trajectories at different baseline levels of grief and depressive symptoms. Level-2 coefficients \((\beta_0, \beta_1)\) show whether one’s individual-level characteristics \((e.g., \text{physical health})\) modify either the intercept or the slope of the grief and depressive symptom trajectories. In
general, results showed that physical health significantly predicted differences in intercept ($\beta_0$) but not slope ($\beta_1$). Negative intercept values indicate that those with better physical health had lower initial levels of grief ($\beta_0$ model 1 = $-1.36$; $\beta_0$ model 2 = $-0.51$) and depressive symptoms ($\beta_0$ model 1 = $-1.07$; $\beta_0$ model 2 = $-0.56$). The larger effects sizes associated with the time-invariant models compared with the time-varying models for both grief ($\beta_1$ model 1 = $-1.36 > \beta_1$ model 2 = $-0.51$) and depressive symptoms ($\beta_1$ model 1 = $-1.07 > \beta_1$ model 2 = $-0.56$) suggest that the relationship between physical health and psychological well-being may be strongest during the earliest months of bereavement and that baseline health rather than changes in health that follow widowhood may be the more powerful predictor of one’s trajectory of psychological well-being over time. Finally, nonsignificant slope estimates ($\beta_1$) suggest that the longitudinal trajectories did not differ by one’s physical health status. Based on these fully controlled longitudinal models, Figure 1 plots the average grief trajectories for three selected levels of physical health that represent the range of values on the 7-point self-reported scale: poor health (1.5), average health ($M = 5.2$), and good health (6.5). As shown, those with better self-reported health at baseline had fewer grief symptoms at all timepoints than those with poorer self-reported health. On the other hand, the slopes of these plotted trajectories followed a similar parallel path, regardless of one’s physical health status. The other estimated models

### Table 2. The Effect of Self-reported Health on the Longitudinal Trajectory of Grief as Estimated From Repeated Measures Growth Modeling Equations ($n = 328$)

<table>
<thead>
<tr>
<th>Level 1: repeated measures</th>
<th>Model 1 (time invariant)</th>
<th>$p$</th>
<th>Model 2 (time varying)</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\pi_0$: Intercept</td>
<td>61.23</td>
<td>&lt;.001</td>
<td>$\pi_0$: Intercept</td>
<td>57.17</td>
</tr>
<tr>
<td>$\pi_1$: Slope (linear)</td>
<td>$-2.54$</td>
<td>.02</td>
<td>$\pi_1$: Slope (linear)</td>
<td>$-1.99$</td>
</tr>
<tr>
<td>$\pi_1$: Slope (quadratic)</td>
<td>0.16</td>
<td>.05</td>
<td>$\pi_1$: Slope (quadratic)</td>
<td>0.13</td>
</tr>
<tr>
<td>Level 2: person-level modifiers</td>
<td></td>
<td></td>
<td>Level 2: person-level modifiers</td>
<td></td>
</tr>
<tr>
<td>$\beta_0$: Baseline Health $\times$ Intercept</td>
<td>$-1.36$</td>
<td>.006</td>
<td>$\beta_0$: Time-Varying Health $\times$ Intercept</td>
<td>$-0.51$</td>
</tr>
<tr>
<td>$\beta_1$: Baseline Health $\times$ Slope (linear)</td>
<td>0.04</td>
<td>.64</td>
<td>$\beta_1$: Time-Varying Health $\times$ Slope (linear)</td>
<td>$-0.02$</td>
</tr>
<tr>
<td>$\beta_1$: Baseline Health $\times$ Slope (quadratic)</td>
<td>$-0.003$</td>
<td>.63</td>
<td>$\beta_1$: Time-Varying Health $\times$ Slope (quadratic)</td>
<td>$-0.004$</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable is grief symptoms as measured by the Texas Revised Inventory of Grief (range 13–65). Actual $p$ values are presented for all estimates. All models control for additional time-invariant covariates including age (centered), sex, education, race, perceived financial adequacy, and methodological differences (site and intervention). Model fit estimated by Akaike Information Criterion (AIC); Model 1 = 7,638; Model 2 = 7,752.

<table>
<thead>
<tr>
<th>Level 1: repeated measures</th>
<th>Model 1 (time invariant)</th>
<th>$p$</th>
<th>Model 2 (time varying)</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\pi_0$: Intercept</td>
<td>14.34</td>
<td>&lt;.001</td>
<td>$\pi_0$: Intercept</td>
<td>11.76</td>
</tr>
<tr>
<td>$\pi_1$: Slope (linear)</td>
<td>$-1.14$</td>
<td>.007</td>
<td>$\pi_1$: Slope (linear)</td>
<td>$-0.95$</td>
</tr>
<tr>
<td>$\pi_1$: Slope (quadratic)</td>
<td>0.06</td>
<td>.06</td>
<td>$\pi_1$: Slope (quadratic)</td>
<td>0.06</td>
</tr>
<tr>
<td>Level 2: person-level modifiers</td>
<td></td>
<td></td>
<td>Level 2: person-level modifiers</td>
<td></td>
</tr>
<tr>
<td>$\beta_0$: Baseline Health $\times$ Intercept</td>
<td>$-1.07$</td>
<td>&lt;.001</td>
<td>$\beta_0$: Time-Varying Health $\times$ Intercept</td>
<td>$-0.56$</td>
</tr>
<tr>
<td>$\beta_1$: Baseline Health $\times$ Slope (linear)</td>
<td>0.05</td>
<td>.13</td>
<td>$\beta_1$: Time-Varying Health $\times$ Slope (linear)</td>
<td>0.04</td>
</tr>
<tr>
<td>$\beta_1$: Baseline Health $\times$ Slope (quadratic)</td>
<td>$-0.003$</td>
<td>.30</td>
<td>$\beta_1$: Time-Varying Health $\times$ Slope (quadratic)</td>
<td>$-0.004$</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable is depressive symptoms as measured by the Geriatric Depression Scale (range 0–15). Actual $p$ values are presented for all estimates. All models control for additional time-invariant covariates including age (centered), sex, education, race, perceived financial adequacy, and methodological differences (site and intervention). Model fit estimated by Akaike Information Criterion (AIC); Model 1 = 6,421; Model 2 = 6,558.
(e.g., using symptom count as the independent variable, time-varying indicators of physical health, or depressive symptoms as the dependent variable) produced very similar patterns of parallel trajectories stratified by physical health status.

Finally, we explored whether one’s physical health was associated with an increased risk for clinical diagnoses. As shown in Tables 4 and 5, self-reported physical health at baseline (or approximately three months after the loss) was a significant predictor of clinical diagnoses at approximately fifteen months postloss. These effects were only slightly mediated when known risk factors were included in the model. For example, self-reported physical health was a significant predictor of one’s risk for CG (odds ratio [OR] = 0.76), probable depressive episode (OR = 0.72), and major depression disorder (OR = 0.47). Models using a count of physical health symptoms as opposed to the self-reported health variables (not shown) revealed nearly identical findings: For each additional physical health symptom at baseline, the odds for major depression increased by 1.27 \( (p = .02) \) and those for CG increased by a factor of 1.14 \( (p = .02) \).

All the multivariate models presented in Tables 2–5 controlled for sociodemographic characteristics (i.e., sex, age, race, education, and financial adequacy) that might confound the relationship between physical health and psychological well-being. The models predicting probable clinical diagnoses (Tables 4 and 5) also controlled for known risk factors of prolonged grief disorders, such as marital quality, expectedness of the death, and social support received after widowhood. Although a few subgroup differences emerged—such as non-Whites having a steeper slope than Whites and persons with lower perceived financial adequacy having greater initial and prolonged levels of psychological distress—the most notable finding is that physical health was the most consistent and statistically significant predictor of psychological well-being across all models specified. Preliminary exploration of higher order interactions such as do those with both poor health and poor financial circumstances have different psychological profiles following the loss? Or can positive
social support buffer the effect of poor health on psychological well-being? Did not bear any statistically significant findings. However, it is likely that the relatively small sample size of the LAL study did not have enough statistical power to identify these higher order subgroup differences. This may be an area of exploration for future research.

Discussion
This analysis is not a comparison of health status among married and unmarried persons (Manzoli et al., 2007) nor is an exploration of how physical well-being changes as a result of widowhood (Bonanno & Kaltman, 2001; Pienta & Franks, 2006; Stroebe et al., 2007). It is, instead, an exploration of the dynamic relationship between physical health and psychological well-being among older adults experiencing widowhood, an event considered as one of the most distressing of all life transitions (Carr & Utz, 2001). There currently exists a large body of research exploring the protective effects of marriage on health (Waite & Gallagher, 2000) and additional research exploring the negative effects of marital disruption on health (Williams & Umberson, 2004). Very little research, to date, has shown whether health at the time of marital disruption, an event considered as one of the most distressing of all life transitions (Carr & Ursano, 2001), may improve or inhibit resilience after such a devastating life transition. This may be an area of exploration for future research.

Table 5. The Effect of Physical Health Status on Major Depression: Odds Ratios and 95% CIs as Estimated by Multinomial Regression Equations (n = 275)

<table>
<thead>
<tr>
<th></th>
<th>Probable depressive episode</th>
<th>Major depression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exp (B) [95% CI]</td>
<td>p</td>
</tr>
<tr>
<td>Self-reported health</td>
<td>0.59 [0.45–0.78]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Female</td>
<td>1.28 [0.53–0.97]</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>1.00 [0.97–1.04]</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.95 [0.32–2.79]</td>
<td></td>
</tr>
<tr>
<td>College degree or more</td>
<td>1.82 [0.86–3.89]</td>
<td></td>
</tr>
<tr>
<td>Finances: more than adequate</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Finances: comfortable</td>
<td>9.03 [1.16–70.3]</td>
<td>.04</td>
</tr>
<tr>
<td>Finances: not very good</td>
<td>29.42 [3.37–257]</td>
<td>.002</td>
</tr>
<tr>
<td>Marital happiness (1–7 scale)</td>
<td>1.06 [0.74–1.50]</td>
<td>.78</td>
</tr>
<tr>
<td>Expected death</td>
<td>0.78 [0.38–1.60]</td>
<td></td>
</tr>
<tr>
<td>Satisfied with support: relatives</td>
<td>0.77 [0.31–1.92]</td>
<td></td>
</tr>
<tr>
<td>Satisfied with support: friends</td>
<td>0.26 [0.12–0.56]</td>
<td>.001</td>
</tr>
<tr>
<td>LAL site location (city vs. city)</td>
<td>1.70 [0.76–3.93]</td>
<td></td>
</tr>
<tr>
<td>LAL intervention condition (A vs. B)</td>
<td>0.93 [0.45–1.92]</td>
<td></td>
</tr>
<tr>
<td>Months bereaved (at study enrollment)</td>
<td>1.04 [0.67–1.60]</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Bold indicates statistically significant effects, p < .05. Actual p values are listed for all significant effects. Model fit estimated by adjusted R² (Nagelkerke) = 0.36. CI = confidence interval.

a Reference category for the dependent variable is “no depression.”
dismissed altogether as somatic expressions of grief as they may indicate underlying health problems.

As expected, poor physical health was associated with greater levels of grief and depressive symptoms. This finding supports ample previous research showing significant correlations between physical and mental health. Simple bivariate correlation values, however, cannot discern causation. Does poor health cause higher levels of grief? Or does poor psychological well-being cause worse physical health? Given relatively few health declines and even fewer deaths among the LAL sample, this analysis was not able to examine how grief and/or depressive symptoms might affect subsequent health outcomes of widowed persons that can be explored in future analyses with different data sets and has been the focus of much of the existing research on this topic (Stroebe et al., 2007). On the other hand, the major contribution of this analysis is its ability to explore whether physical health might modify one’s subsequent mental health trajectory after widowhood. In this regard, we found that physical health during the early months of widowhood did indeed stratify one’s level of reported grief and depressive symptoms but that widowed persons followed a similar decelerating trajectory of grief and depressive symptoms over time, regardless of whether they reported good or bad health after widowhood and regardless of whether their physical health declined or improved over the course of bereavement. These results not only support the widely established connection between physical and mental health but also suggest a somewhat universal or at least widely shared bereavement experience that follows a pattern dictated by time rather than one that might be predicted by an individual’s physical capacity at the time of the loss.

Although widowed persons typically followed the same trend of fewer grief and depressive symptoms over time (i.e., recovery or resilience), those with the lowest levels of self-reported health or the highest number of physical symptoms consistently reported the highest levels of grief and depressive symptoms throughout the first year and a half of widowhood. Similarly, those with below-average health during the early months of widowhood had significantly higher risks of clinical diagnoses such as major depression and CG at approximately fifteen to eighteen months postloss. These findings suggest that although physical health may not modify the typical fluctuations in grief and depressive symptoms following widowhood (i.e., the slopes were similar across persons regardless of health status), physical health may still be an important risk factor to help identify persons most likely to experience heightened or prolonged clinical reactions. Theoretically, it was assumed that those with lower physical capacities may not be able to juggle the competing demands required by bereavement, which may heighten their risk for grief and depressive symptoms. For example, someone who has poor physical health may not be able to fulfill the tasks of daily life that their spouse once did (like pay the bills, cook dinner, maintain the house or yard); the inability to do these types of tasks may lead to greater levels of stress that may cyclically affect both physical health and psychological well-being following widowhood.

This analysis affords a nuanced understanding of bereavement-related outcomes because it utilized four separate measures of psychological well-being—longitudinal trends in both grief (a) and depressive symptoms (b), as well as probable diagnoses of both major depression (c) and CG (d). The first two outcomes allowed us to model the natural or common fluctuations in psychological well-being that accompany widowhood, whereas the latter two allowed us to identify a small subset of individuals who had the most severe and lasting psychological distress following widowhood. Although measures of grief, depression, and the clinical diagnoses of each are conceptually distinct (Stroebe et al., 2000), our analyses found that all of them are predicted by a similar set of risk factors, with perhaps the most robust predictor being one’s physical health.

Practice Considerations

Greater physical symptoms following widowhood could lead to increased health care utilization among recently widowed, but the somatization of bereavement may not be adequately addressed through existing medical care systems. Bereavement support should include interventions aimed at addressing both the physical and the psychological changes that accompany widowhood. Health care professionals should, at a minimum, consider one’s marital status, especially if there have been recent changes, when interpreting physical symptoms so as to not over- or underdiagnose underlying physical ailments. For symptoms without a clear pathological cause, primary care physicians might refer recently bereaved patients to social workers or counselors who can help address symptoms that
may be stemming from the psychological distress associated with this stressful life transition. Mental health providers may consider including topics related to self-care and health promotion rather than focusing only on the clients’ emotional needs. Because our analyses found such a consistent relationship between physical health at the time of widowhood and the severity of psychological symptoms following widowhood, mental health providers may also consider assessing one’s health status at the time of widowhood—perhaps with the single-item self-reported global health question as is commonly used in survey research (Ferraro & Farmer, 1999)—as a way to identify the persons most at risk.

A general model of psychosomatics assumes that talking about one’s grief, rather than internalizing it or holding it in, is good for one’s physical health (Lewis & Lewis, 1972). Using similar logic, addressing one’s physical health through better self-care practices might allow one to better adjust to the emotional loss and sadness associated with the death of a spouse (Brown & Smith, 2009; Worden, 2009). In support of this logic, we found that those who reported poorer physical health at the time of widowhood had the highest risk for major depression and CG. Thus, in order to reduce costs associated with prolonged clinical care, early interventions emphasizing self-care practices could be targeted to those exhibiting poorer physical health at the time of widowhood. In cases where the death is expected, such efforts could begin prior to the death event. This would be particularly applicable for those enrolled in hospice or engaged in significant spousal caregiving roles. Rather than simply focusing on the dying patient, hospice and home health providers could direct some attention to the surviving spouse, helping them to assess and enhance their own physical health (Empeno et al., 2011). Caregivers who sacrifice personal health to meet the needs of the dying have been found to have greater distress and social isolation following the death (Burton, Haley, & Small, 2006). In short, bereavement and early postbereavement interventions that enhance the widow(er)s’ physical health might be effective in reducing the clinical complications associated with this stressful life transition.

Of course, no two individuals will experience widowhood in the same way (Bonanno & Kaltman, 2001; Carr & Utz, 2001), so none of the proposed interventions will be universally effective. Future research should explore whether there are particular subgroups of widowed persons for whom the relationship between physical health and psychological well-being is not as highly correlated. Uncovering additional individual-level characteristics that might modify the trajectories of physical health and psychological well-being will allow us to develop and target interventions to older adults facing this common, yet highly distressing, life transition.

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