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Authors

Huo, Meng
Kim, Kyungmin
Wang, Dahua

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Long-term psychological consequences of parental bereavement prior to midlife: volunteering helps

Meng Huo[a], Kyungmin Kim[b] and Dahua Wang[c]

[a]Department of Human Ecology, University of California, Davis, CA, USA; [b]Department of Child Development and Family Studies, Research Institute of Human Ecology, Seoul National University, Seoul, South Korea; [c]Institute of Developmental Psychology, Beijing Normal University, Beijing, China

ABSTRACT

Objectives: Losing a child prior to midlife may be a uniquely traumatic event that continues to compromise parents' well-being in later life. This study compared psychological well-being between bereaved and non-bereaved parents, and examined whether volunteering protects bereaved parents. Because most families have more than one child, we further explored whether the number of living children parents had differentiated bereaved parents in their well-being.

Methods: We analyzed a pooled sample of parents aged 50+ ($N = 12{,}023$) from the *Health and Retirement Study* (2010/2012–2012/2014), including parents who lost a child prior to 50 and those who never lost a child. Two-level linear regression models were estimated to test the associations between child loss, volunteering, and psychological well-being, and examine the moderating effect of number of living children.

Results: Bereaved parents reported more depressive symptoms and lower life satisfaction than their non-bereaved counterparts, which was more evident among parents with fewer children alive. Among bereaved parents, volunteering, particularly volunteering 100+ hours/year, was associated with better psychological well-being at baseline; yet, volunteering 1–99 hours/year led to a larger increase in life satisfaction over time. The benefits of volunteering held true regardless of the number of living children.

Conclusion: This study adds to our understanding of the lasting effect of parental bereavement and suggests volunteering as a potential intervention aimed at helping bereaved older parents. Findings identify parents with fewer children as a particularly vulnerable population in the face of child loss and calls for more resources allocated to help them.

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Child loss; bereaved parents; volunteer; depression; health and retirement study

Introduction

Bereavement, losing a significant other to death, is a stressful event that almost everyone experiences at some point in their lives (Stroebe et al., 2007). Gerontological research on this topic has primarily examined spousal bereavement, which occurs most often in older age (Carr, 2020). Yet, losing a child may also have intense adverse effects on older adults' health and well-being (Malkinson & Bar-Tur, 2005; Song et al., 2010). Previous studies found that young and midlife bereaved parents reported more depressive symptoms a few years (Alam et al., 2012; McCarthy et al., 2010) and even 18 years after losing a child (when parents were 53 years old; Rogers et al., 2008). Less is known, however, about these bereaved parents' psychological well-being in older age—when older adults typically pursue generativity by supporting younger generations (An & Cooney, 2006; Gruenewald et al., 2012) and/or require support from children due to health declines (Fingerman & Birditt, 2011). Losing a child early and prior to midlife is particularly considered as "off-time" and its lasting impacts have received increasing attention in research (Umberson et al., 2020). The current study aimed to add to this burgeoning literature by comparing older bereaved parents who once lost a child prior to midlife and their non-bereaved counterparts in psychological well-being. In addition to depressive symptoms, we assessed life satisfaction to capture parents' overall appraisal of their well-being.

It is crucial to explore targets of interventions that can help bereaved parents lead a less depressed and more satisfying late life. This study considered formal volunteering—unpaid help provided to people beyond volunteers' own households under the auspices of formal organizations (Carr et al., 2018). A plethora of research documents benefits of senior volunteering (Anderson et al., 2014; Burr et al., 2021; Carr et al., 2015; Owen et al., 2021), which has been shown to protect older adults under stress (Brown & Brown, 2017). Indeed, volunteering alleviates loneliness among newly widowed older adults (Carr et al., 2018; Li, 2007) and reduces psychological as well as physiological reactivity in older adults faced with acute stressors (e.g. daily minor stressors; Han et al., 2018, 2020) and chronic stressors (e.g. functional limitations; Huo et al., 2021). We extended prior research by examining whether volunteering in later life attenuates long-term psychological consequences of losing a child prior to midlife.

Drawing on a nationally representative sample from the *Health and Retirement Study*, this study examined how losing a child prior to midlife differentiates older parents' depressive symptoms and life satisfaction, and whether volunteering improves bereaved parents' well-being. Given that the current

CONTACT Meng Huo mmhuo@ucdavis.edu

cohorts of older adults typically have multiple children (Fingerman et al., 2012), we considered the number of additional living children parents have when testing our hypotheses. Findings may help us identify bereaved parents who are more vulnerable in later life and inform interventions designed to protect these parents.

Death of a child prior to midlife and psychological well-being in late life

Research has mostly examined individuals' depressive symptoms months after bereavement and documented that most bereaved individuals exhibited resilience (Bonanno et al., 2004; Carr & Boerner, 2009; Infurna & Luthar, 2017). Yet, the death of a child may be a uniquely traumatic event that continues to compromise parents' well-being in the long run (Stroebe et al., 2007), particularly as they enter late life. A compelling literature has shown that parents' ties to their children are emotionally intense across the lifespan (Fingerman et al., 2020). Parents typically expect children to outlive them, and as the generational stake hypothesis posits, parents view their children as a legacy and invest in children as their future (Giarrusso et al., 2004). Older adults seek to achieve generativity, partially by serving parent roles and guiding the next generation (An & Cooney, 2006). Further, older parents often turn to their adult children as they experience health declines (Fingerman et al., 2011; Kim et al., 2017) or go through stressful transitions such as widowhood (Ha, 2008; Isherwood et al., 2012). A qualitative study of 47 older bereaved parents explicitly documented that losing a child prior to midlife disrupted parents' expectations for possible interactions with their children and deprived them of a key source of connection and support in later life (Malkinson & Bar-Tur, 2005). Parental bereavement may act as a chronic stressor that influences parents' everyday lives and reduces their well-being over the long run. In this study, we compared older parents who lost a child prior to midlife and parents who never lost a child, expecting bereaved parents to report more depressive symptoms and lower life satisfaction.

Volunteering may help

We then asked whether volunteering may protect bereaved parents from child loss and promote their psychological well-being. We drew on the Dual Process Model (Stroebe et al., 2007), which describes how bereaved individuals constantly oscillate between loss-oriented grief and restoration-oriented coping behaviors and links these coping behaviors to better outcomes (Wheeler, 2001). Volunteering may be a key restoring activity as it can help bereaved older parents regain control over their own lives, enrich their social networks, promote their sense of purpose, and provide unique opportunities for them to pursue generative goals, all of which have been shown to reduce older adults' depressive symptoms and improve their life satisfaction (Anderson et al., 2014; Burr et al., 2021).

Volunteering can also serve as a buffer against the cumulative stress that bereaved parents experience due to losing a child prior to midlife. The caregiving system model presents a neurobiological framework depicting the stress-buffering effect of prosocial behaviors, such as volunteering. Indeed, prosocial behaviors occur as a result of resolved conflicts between egoistic and altruistic motivations (Brown & Brown, 2017), which involves a mechanism in the brain that secretes stress-regulatory hormones such as oxytocin. Recent studies have supported this model and shown how volunteering reduces older adults' reactivity to stress and promote their well-being (Han et al., 2018, 2020; Huo et al., 2021). Accordingly, among older parents who might still be suffering from losing a child prior to midlife, we expected those who volunteered to report fewer depressive symptoms and higher life satisfaction than those who did not volunteer. We also sought to track changes in the well-being outcomes of bereaved parents over time to identify the lasting effect of volunteering.

Further, the literature has increasingly emphasized assessing the intensity of volunteer activities and documented most benefits related to volunteering at least 100 h per year (i.e. 2 h per week; Carr et al., 2018; Huo et al., 2021). We tested volunteering 1–99 h/year and 100+ hours/year separately, expecting to observe a stronger benefit of the latter.

Number of additional living children

Given our interest in identifying more vulnerable bereaved parents and those who may benefit more from volunteering, we examined our research questions considering additional children that parents may have. Having other children after losing one and/or devoting more to remaining children may distract bereaved parents from grief and reduce the adverse effect of bereavement. Role theory emphasizes the sense of meaning and purpose related to each role individuals serve (Thoits, 2012), which has been associated with recovery from grief related to child loss (Rogers et al., 2008). Compared to parents with fewer children, those with more children have a better chance of staying socially connected, receiving comfort with distress, and achieving generativity as a parent, all of which have been associated with more resilient adaption following child loss (Infurna & Luthar, 2017). A burgeoning literature has examined bereaved parents in a more extreme situation—parents who lost their only children (i.e. *Shidu* parents) in China, where the one-child policy was implemented for several decades in the last century, and documented severe mental health problems among those bereaved parents (Yin et al., 2020). Older parents in the United States typically have more than one child (Fingerman et al., 2012), but we still expected worse well-being outcomes among parents with fewer children.

With regard to the impact of volunteering, however, we tested competing hypotheses. On one hand, volunteering may bring unique benefits to bereaved parents with fewer children given their more limited social activities (Malkinson & Bar-Tur, 2005). On the other hand, however, volunteering is still a contribution of time and energy; it could become a burden and lead to emotional burnout in some situations, which is also a reason why many volunteers quit (Allen & Mueller, 2013). Bereaved parents with more children may receive more support from children and have less to worry about while maintaining regular engagement in their volunteer activities.

Other factors as covariates

We adjusted for additional factors associated with death of a child, psychological well-being, and volunteering as covariates. Demographic covariates included participants' age, gender, education, household income, racial/ethnic status, employment status, marital status, the number of years since child loss, and informal help. Research has documented variation in depression and life satisfaction by age, gender, socioeconomic status (SES; education, household income), racial/ethnic status, and marital

status (Fiske et al., 2009). Parents in racial/ethnic minority groups (e.g. Black parents) are more likely to lose a child to death (Umberson et al., 2017); they are less likely to volunteer but may receive greater benefits when they do (Tang et al., 2012). Moreover, upper SES, employed, and married parents are more likely to volunteer (Carr et al., 2015). We adjusted for the number of years that have passed since parents lost their children. Bereaved individuals typically report more intense depressive symptoms within the first few years following loss (Bonanno et al., 2004; Stroebe et al., 2007). We also included informal help, which refers to unpaid help provided to friends, neighbors, or relatives and is thought to impact well-being as well (Taniguchi, 2012).

We considered health indicators, including self-rated health and number of chronic conditions. Compared to non-bereaved parents, bereaved parents report more health problems (Rogers et al., 2008). Poor physical health also limits older adults' engagement in volunteer activities and affects their depressive symptoms as well as life satisfaction (Principi et al., 2016).

The current study

Utilizing data from the *Health and Retirement Study* (HRS), the current study identified older adults who lost a child prior to midlife. We compared these bereaved parents and their non-bereaved counterparts in psychological well-being to examine the long-term implication of parental bereavement. We then focused on bereaved parents and asked whether those who volunteered reported better well-being outcomes. Across hypotheses, we examined the moderating effect of the number of living children older adults had.

Hypothesis 1: Bereaved parents who lost a child prior to midlife report more depressive symptoms and lower life satisfaction than their counterparts who never lost a child. These associations are weaker among parents who had more living children.

Hypothesis 2: Bereaved parents who volunteered, particularly those who volunteered regularly (100+ hours/year), report fewer depressive symptoms and higher life satisfaction than those who did not volunteer. These associations vary by the number of children parents had.

Methods

Data and study sample

Data were from the *Health and Retirement Study* (HRS), whose data collection began in 1992. The HRS recruited a nationally representative sample of Americans aged 50+ and their spouses and followed them with core interviews biennially. The key predictor variable of this study—death of a child was assessed in the Leave Behind Questionnaire from 2004 to 2012 (LBQ; Participant Lifestyle Questionnaire; Smith et al., 2017). The LBQ was administered in alternative waves to two subsamples divided randomly. The same subsample provided the LBQ data once every 4 years. Because the two subsamples were mutually exclusive, we pooled participants from two consecutive waves and adjusted for a dummy-coded variable indicating the random subsample. We focused on participants' most recent reports on the child loss they experienced, and thus used the LBQ data collected in 2010 and 2012. We adjusted for a dummy-coded variable which indicates the random subsample from which participants were drawn (0 = *2010 cohort*, 1 = *2012 cohort*). Other key and control variables were drawn from the core interviews in the respective year.

In total, 15,721 participants (8,310 from the 2010 cohort and 7,411 from the 2012 cohort) were included in the pooled sample. Among these participants, 1,615 had no child ever born, 377 had missing data on child loss, 10 provided problematic data (5 reported a child death prior to their own birth and 5 reported a child death prior to puberty), 1,206 had a child died after 50, and 490 were younger than 50 years old. The final sample included 12,023 participants and 9% ($n = 1{,}074$) reported having a child died prior to 50. We chose 50 as the cutoff age, following prior research on family bereavement (Umberson et al., 2017) and also in the hope of including more bereaved parents in this study. Compared to the excluded participants ($n = 3{,}698$), the final sample was better educated, better paid, healthier, less likely to be a racial/ethnic minority, more likely to be male, married or work for pay, had fewer chronic conditions, children, and reported fewer depressive symptoms and higher life satisfaction.

Measures

Death of a child prior to midlife

We used participants' reports on death of a child in the LBQ in 2010/2012. Participants indicated whether they had ever experienced the death of a child, and if so, when the most recent year of a child's death was. We calculated parent age at the time of the child's death by subtracting this year at child loss from participants' birth year. A dummy-coded variable was generated, 1 = *experienced child death prior to 50* and 0 = *never experienced child death*. We also calculated the number of years since child loss, by subtracting the interview year by the year of child death. This variable was adjusted for in the models testing the second hypothesis.

Psychological well-being

Participants indicated whether they had experienced depressive symptoms much of the time in the prior week, using the shortened version of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Responses were coded as 1 (*yes*) or 0 (*no*). Symptoms include (a) feeling depressed, (b) everything was an effort, (c) restless sleep, (d) was happy, (e) felt lonely, (f) enjoyed life, (g) felt sad, and (h) could not get going (eight items in total). We calculated a sum of depressive symptoms ($\alpha = .76$) after reverse-coding the two positively-phrased items (i.e. was happy, enjoyed life). Participants also rated how satisfied they were with their lives on a scale from 1 (*not at all satisfied*) to 5 (*completely satisfied*). We examined well-being outcomes at baseline (2010/2012) and in the subsequent wave (2012/2014).

Volunteering

Participants indicated whether they had spent any time in the past 12 months doing volunteer work for religious, educational, health-related or other charitable organizations (1 = *yes*, 0 = *no*). If so, participants further reported whether the time amounted to 50 hours, 100 hours, and 200 hours. Based on the information, we identified each participant's volunteer status (1 = *volunteered*, 0 = *did not volunteer*) and also generated three dummy-coded variables (1 = *yes*, 0 = *no*) to indicate whether participants did not volunteer at all (treated as the reference

group), volunteered 1–99 hours per year, or volunteered 100+ hours per year (Huo et al., 2021). We examined volunteering variables at baseline (2010/2012).

Background characteristics

We adjusted for background characteristics and health indicators at baseline (2010/2012). Participants reported age in years, gender (1 = *male*, 0 = *female*), racial/ethnic status (*non-Hispanic White* [treated as the reference group], *Hispanic*, *non-Hispanic Black*, and non-Hispanic other race), employment status (1 = *working for pay*, 0 = *not working for pay*), and partnership status (1 = *married/partnered*, 0 = *not married/partnered*). Participants reported the number of years they attended school, their household income (cleaned and imputed by the RAND Corporation), and the number of living children they had. Given the skewed distribution of household income, we log-transformed this variable. As for health, participants self-rated their health from 1 (*poor*) to 5 (*excellent*; Idler & Kasl, 1995) and reported the number of chronic conditions they ever had, including eight conditions (i.e. hypertension, psychiatric problems, diabetes, cancer, chronic lung disease, arthritis, stroke, and heart problems such as heart attack, coronary heart disease, angina, or congestive heart failure). Participants indicated whether they engaged in unpaid help to friends, neighbors, or relatives in the past 12 months (1 = *yes*, 0 = *no*), based on which we also generated dummy-coded variables indicating informal help 1–99 hours per year or 100+ hours per year.

Analytic strategy

Table 1 presents characteristics of bereaved parents (i.e. who lost a child prior to midlife) and non-bereaved parents. Statistical analyses such as *t*-tests (for continuous variables) and chi-square tests (for categorical variables) were conducted to compare these two groups of parents.

Among the total sample of 12,023 participants, 6,834 were couples from 3,417 households. We estimated 2-level models using SAS PROC MIXED to account for the nested structure of data: individual (*level 1*) nested within couple (*level 2*). Less than 2% of participants had missing data in our key variables, and missing data in the outcome variables were handled using full-information maximum likelihood (FIML) in PROC MIXED.

To test the first hypothesis that losing a child prior to midlife was associated with poorer psychological well-being, we examined death of a child prior to midlife (1 = *yes*, 0 = *no*) as the predictor for depressive symptoms and life satisfaction. Next, to examine the moderating effect of the number of living children that parents had, we tested an interaction term of child loss prior to midlife × the number of living children. In these 2-level models, we adjusted for participant age, gender, education, household income, self-rated physical health, chronic conditions, functional limitations, employment status, racial/ethnic status, marital status, the number of living children, and the indicator for subsamples. All continuous variables, including the number of living children and covariates, were centered based on the sample mean. For all significant interactions, we conducted simple slopes analysis to describe the moderated association between the predictor and the outcome at different levels (1 standard deviation below and above the mean) of the moderator, the number of living children.

Table 1. Background characteristics of the study sample.

	Bereaved parents (n = 1,074)		Non-bereaved parents (n = 10,949)		
Variable	*M*	(*SD*)	*M*	(*SD*)	*t*
Age (in years)	68.23	(10.48)	67.18	(10.52)	3.13**
Education (in years)	12.51	(5.44)	13.28	(6.42)	−3.81***
Income	52,121.79	(69,817.30)	68,119.85	(97,433.17)	−6.88***
Self-rated health	3.04	(1.08)	3.21	(1.07)	−5.20***
Chronic conditions	2.46	(1.57)	2.06	(1.45)	8.02***
Functional limitations	2.96	(2.89)	2.44	(2.69)	5.69***
Number of living children	3.52	(2.07)	3.33	(1.92)	2.87**
Depressive symptoms	1.77	(2.69)	1.38	(2.04)	4.56**
Life satisfaction	3.79	(0.91)	3.89	(0.86)	−3.42**
Time since child loss (in years)	37.60	(13.89)	—	—	—
	Proportion		Proportion		χ^2
Male	.35		.42		23.76***
Race/ethnicity					
Non-Hispanic White	.62		.72		43.21***
Non-Hispanic Black	.25		.15		75.76***
Hispanic/Latinx	.10		.11		0.27
Other race	.03		.03		0.00
Working for pay	.32		.39		16.43***
Married	.62		.69		20.32***
Informal help					
Never	.49		.44		10.92***
1–99 hrs/yr	.38		.42		7.04**
100+ hrs/yr	.13		.14		0.96
Volunteering					
Never	.63		.61		1.79
1–99 hrs/yr	.21		.24		4.33*
100+ hrs/yr	.16		.15		0.43
2012 cohort	.48		.47		0.03

Notes. N = 12,023. Bereaved parents refer to parents who lost a child prior to 50; non-bereaved parents refer to parents who never lost a child. All characteristics were measured in 2010/2012, depending on the random subsample parents belonged to.
*p < .05. **p < .01. ***p < .001.

We then focused on a subsample of bereaved parents to address the second hypothesis. We first examined volunteer status at baseline (1 = *volunteered*, 0 = *did not volunteer*) as the main predictors for depressive symptoms and life satisfaction. To capture how volunteering influences changes in well-being outcomes, we estimated another set of models predicting depressive symptoms and life satisfaction 2 years later (i.e. in the subsequent wave), while adjusting for these outcomes at baseline. We then added interaction terms involving the number of living children as illustrated above. In addition to the covariates listed above, we adjusted for the number of years since child loss and informal help specifically for this hypothesis. Again, all continuous variables were centered and significant interactions were further tested in simple slopes analyses. To better understand the impact of volunteering frequency, we re-estimated models for the second hypothesis considering dummy-coded volunteering intensity variables (i.e. volunteered for 1–99 hours/year vs. for 100+ hours/year).

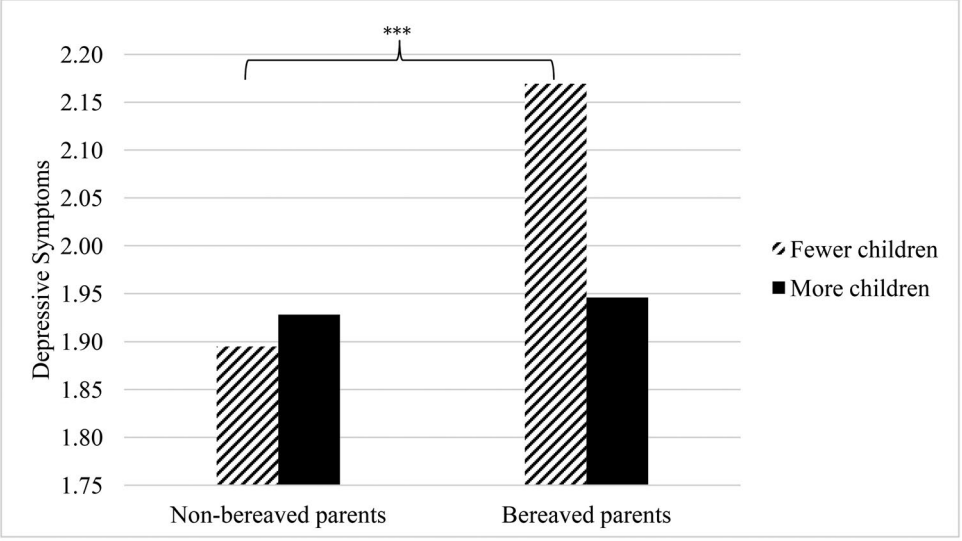
Results

In total, parents in the current sample were 67 years old on average, ranging from 50 to 101, and they had 3.34 children still alive at the time of the interview. Parents reported few depressive symptoms (1–2) and high life satisfaction in general. The sample included 42% male and 29% racial/ethnic minority. About one third parents were still employed for pay and two in every three parents married. Parents were less likely to volunteer formally or help informally more than 100 hours per year versus

Table 2. Models predicting depressive symptoms and life satisfaction from death of a child prior to 50.

	Depressive symptoms				Life satisfaction			
	Main effect		Moderation effect		Main effect		Moderation effect	
Variable	*B*	(*SE*)	*B*	(*SE*)	*B*	(*SE*)	*B*	(*SE*)
Fixed effects								
Intercept	6.47***	(0.19)	1.91***	(0.04)	1.67***	(0.09)	3.64***	(0.02)
Death of a child prior to 50	0.13*	(0.06)	0.15**	(0.06)	−0.06*	(0.03)	−0.06*	(0.03)
× Number of living children	—	—	−0.07*	(0.03)	—	—	0.01	(0.01)
Covariates								
Age (in years)	−0.03***	(0.00)	−0.03***	(0.00)	0.02***	(0.00)	0.02***	(0.00)
Male	−0.16***	(0.03)	−0.16***	(0.03)	−0.04*	(0.01)	−0.04*	(0.01)
Education (in years)	−0.00	(0.00)	−0.00	(0.00)	−0.00***	(0.00)	−0.00***	(0.00)
Income (log-transformed)	−0.07***	(0.01)	−0.07***	(0.01)	0.02***	(0.01)	0.02***	(0.01)
Self-rated health	−0.56***	(0.02)	−0.56***	(0.02)	0.24***	(0.01)	0.24***	(0.01)
Chronic conditions	0.16***	(0.01)	0.16***	(0.01)	−0.01	(0.01)	−0.01	(0.01)
Number of living children	0.00	(0.01)	0.01	(0.01)	0.00	(0.00)	0.00	(0.00)
Working for pay	−0.37***	(0.04)	−0.37***	(0.04)	0.02	(0.02)	0.02	(0.02)
Married	−0.53***	(0.04)	−0.53***	(0.04)	0.33***	(0.02)	0.33***	(0.02)
Non-Hispanic Black	−0.04	(0.05)	−0.04	(0.05)	0.04	(0.02)	0.04	(0.02)
Hispanic/Latinx	0.19***	(0.06)	0.19***	(0.06)	0.09***	(0.03)	0.09***	(0.03)
Other race	0.10	(0.10)	0.09	(0.10)	0.07	(0.05)	0.07	(0.05)
2012 cohort	0.01	(0.03)	0.01	(0.03)	0.01	(0.02)	0.01	(0.02)
Random effects								
Intercept variance	0.46***	(0.07)	0.45***	(0.07)	0.15***	(0.01)	0.15***	(0.01)
Residual variance	2.36***	(0.07)	2.36***	(0.07)	0.48***	(0.01)	0.48***	(0.01)
−2 log likelihood	44,481.8		44,481.1		27,062.0		27,067.8	

Notes. Participant $N = 12{,}023$. All variables were measured in 2010/2012.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.



$^{***}p < .001$.

Figure 1. The interaction of losing a child prior to midlife × number of living children on depressive symptoms.$^{***}p < .001$.

1–99 hours/year. Bereaved parents losing a child prior to 50 were older, less educated, less paid, and they had poorer health, more chronic conditions, more functional limitations, more living children, more depressive symptoms, and lower life satisfaction than their non-bereaved counterparts (see Table 1). Chi-square tests showed that bereaved parents were more likely to be female, racial/ethnic minority, and less likely to be married or employed for pay. Bereaved parents had lost their children for an average of 38 years.

Death of a child prior to midlife and psychological well-being in late life

We first tested the hypothesized association between death of a child prior to 50 and psychological well-being in later life (see Table 2). The main effect findings showed that bereaved parents who lost a child prior to 50 reported more depressive symptoms ($B = 0.13$, $p = .017$) and lower life satisfaction ($B = -0.06$, $p = .028$) than parents who never lost a child. We then examined whether these associations varied by the number of living children that parents had, and found a significant interaction effect on parents' depressive symptoms ($B = -0.07$, $p = .014$). Simple slopes analysis further showed that only bereaved parents with fewer living children reported more depressive symptoms than their non-bereaved counterparts ($B = 0.30$, $p < .001$). We did not observe a difference between bereaved parents and non-bereaved parents who had more living children ($B = 0.02$, $p = .078$; see Figure 1). The association between death of a child prior to 50 and life satisfaction held regardless of the number of children parents had.

Volunteering may help

We then limited our sample to bereaved parents who lost a child prior to 50 and tested the role volunteering played. Bereaved parents who volunteered, compared to those who did not, reported fewer depressive symptoms ($B = -0.33$, $p = .008$), regardless of the number of additional living children they had. We also observed a significant interacting impact of volunteer status × number of living children on parents' life satisfaction ($B = 0.07$, $p = .018$). Simple slopes analysis revealed that volunteering was only associated with higher life satisfaction among bereaved parents who had more children ($B = 0.15$, $p = .054$), but not parents who had fewer children ($B = -0.10$, $p = .18$). We observed similar findings for volunteering at least 100 hours/year (vs. not volunteering at all). Bereaved parents who volunteered 100+ hours/year in general reported fewer depressive symptoms ($B = -0.45$, $p = .007$) and higher life satisfaction ($B = 0.17$, $p = .029$). Yet, we also identified individual differences in that volunteering 100 hours/year was only associated with higher life satisfaction among bereaved parents who had more children ($B = 0.32$, $p = .003$), but not parents who had fewer children ($B = -0.00$, $p = .96$; see Figure 2). Given the same pattern of findings, we present models for volunteering 100+ hours/year in Table 3, instead of the models for volunteer status.

As for changes in well-being between baseline and the subsequent wave (2 years later), we found that volunteering 1–99 hours per year was associated with a larger increase in life satisfaction during the 2 years following baseline ($B = 0.15$, $p = .020$; not shown in table). This effect held true regardless of number of living children that bereaved parents had. We did not observe other significant effects involving volunteer status or volunteering at least 100 hours/year. Findings are not shown here but available upon request.

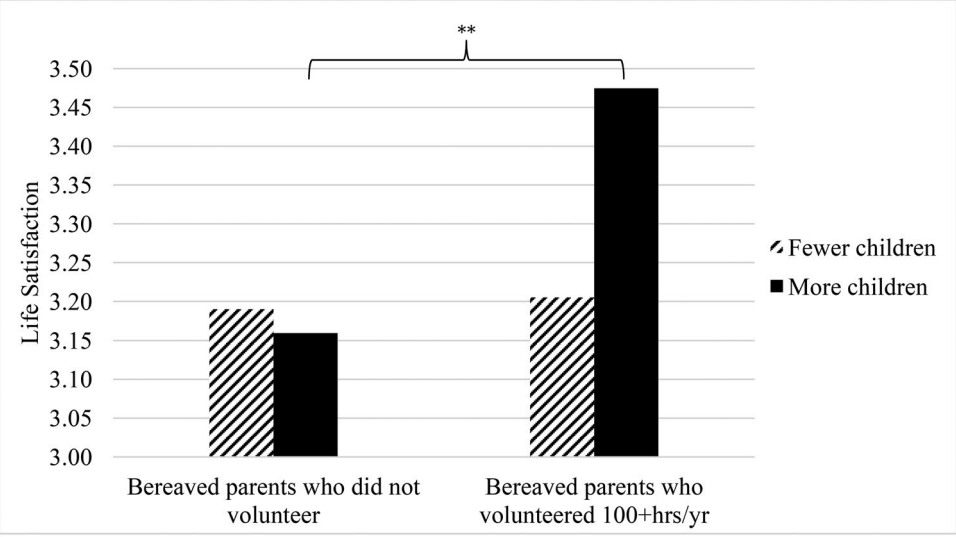
Discussion

Scholars have increasingly recognized the prevalence of child loss among American parents and found that losing a child prior to midlife had long-lasting adverse effects on parents' health and well-being in older age (Umberson et al., 2020). The current study added to this growing body of research and revealed that older bereaved parents reported poorer well-being than their non-bereaved counterparts, even after losing their children for an average of four decades. We also found that volunteering was associated with better well-being among bereaved parents, offering empirical evidence to some recent advocates for having bereaved individuals serve as volunteers (Carr et al., 2018; McClatchey et al., 2021). Lastly, we considered individual differences among parents and identified parents with fewer living children as a particularly vulnerable population that requires additional help and resources.

Death of a child prior to midlife and psychological well-being in late life

Our hypotheses were confirmed, in that bereaved older parents ever losing a child prior to midlife reported more depressive symptoms and lower life satisfaction than older parents who never lost a child. Findings are in line with prior research suggesting that parents exhibit persistent depressive symptoms after losing a child (Floyd et al., 2013; Rogers et al., 2008; Wijngaards-de Meij et al., 2008), and added evidence for the adverse effect of child loss on parents' overall life satisfaction. Some recent studies have also documented resilience as the dominant pattern of bereaved parental well-being (Infurna & Luthar, 2017; Maccallum et al., 2015). Yet, our study found that even after 40 years following child loss, on average, bereaved older parents still reported worse well-being than parents who never lost a child, which is suggestive of a long-lasting adverse effect of child loss prior to midlife. This finding called for more research and intervention programs designed to better understand and help the population of bereaved parents in later life.

This study also contributed to our understanding of the variation in the documented adaption and resilience after bereavement (Bonanno et al., 2004), by revealing a stronger adverse effect of child loss among older adults who had fewer children. This finding is consistent with prior research showing that having additional children accelerated parents' recovering child-loss-related grief (Rogers et al., 2008). Infurna and Luthar (2017) identified some predictors of the variation in parental resilience, of which *social connectedness* and *anticipating comfort when distress* are closely relevant to the number of additional living



**$p < .01$.

Figure 2. The interaction of volunteering × number of living children on bereaved parents' life satisfaction.**$p < .01$.

Table 3. Models predicting depressive symptoms and life satisfaction from volunteering among bereaved parents.

	Depressive symptoms				Life satisfaction			
	Main effect		Moderation effect		Main effect		Moderation effect	
Variable	*B*	*(SE)*	*B*	*(SE)*	*B*	*(SE)*	*B*	*(SE)*
Fixed effects								
Intercept	7.10***	(0.71)	2.94***	(0.34)	2.43***	(0.33)	3.18***	(0.16)
Volunteered 1–99 hrs/yr	−0.25	(0.14)	−0.25	(0.14)	−0.08	(0.07)	−0.08	(0.07)
× Number of living children	—	—	0.03	(0.07)	—	—	0.05	(0.03)
Volunteered 100+ hrs/yr	−0.45**	(0.17)	−0.46**	(0.17)	0.17*	(0.08)	0.16*	(0.08)
× Number of living children	—	—	0.10	(0.08)	—	—	0.08*	(0.04)
Covariates								
Age (in years)	−0.03***	(0.01)	−0.03***	(0.01)	0.01	(0.00)	0.01	(0.00)
Male	−0.32**	(0.12)	−0.33**	(0.12)	0.03	(0.06)	0.02	(0.06)
Education (in years)	−0.01	(0.01)	−0.01	(0.01)	−0.01**	(0.00)	−0.01**	(0.00)
Income (log-transformed)	−0.04	(0.05)	−0.04	(0.05)	−0.01	(0.02)	−0.01	(0.02)
Self-rated health	−0.60***	(0.06)	−0.60***	(0.06)	0.25***	(0.03)	0.25***	(0.03)
Chronic conditions	0.18***	(0.04)	0.18***	(0.04)	−0.02	(0.02)	−0.03	(0.02)
Number of living children	−0.06*	(0.03)	−0.08*	(0.03)	0.01	(0.01)	−0.01	(0.02)
Working for pay	−0.47***	(0.14)	−0.47***	(0.14)	0.08	(0.06)	0.07	(0.06)
Married	−0.41**	(0.14)	−0.41**	(0.14)	0.39***	(0.06)	0.39***	(0.06)
Non-Hispanic Black	−0.16	(0.15)	−0.15	(0.15)	−0.02	(0.07)	−0.01	(0.07)
Hispanic/Latinx	−0.19	(0.21)	−0.18	(0.21)	−0.04	(0.10)	−0.03	(0.10)
Other race	0.26	(0.35)	0.26	(0.35)	−0.03	(0.16)	−0.03	(0.16)
Time since child death (in years)	0.01	(0.01)	0.01	(0.01)	−0.01*	(0.00)	−0.01*	(0.00)
Informal help 1–99 hrs/yr	−0.11	(0.13)	−0.11	(0.13)	0.02	(0.06)	0.02	(0.06)
Informal help 100+ hrs/yr	−0.22	(0.19)	−0.23	(0.19)	−0.01	(0.09)	−0.01	(0.09)
2012 cohort	−0.02	(0.12)	−0.02	(0.12)	0.02	(0.05)	0.02	(0.05)
Random effects								
Intercept variance	0.74**	(0.31)	0.75**	(0.31)	0.13*	(0.06)	0.13*	(0.06)
Residual variance	2.46***	(0.31)	2.44***	(0.31)	0.55***	(0.06)	0.54***	(0.06)
−2 log likelihood	4,136.5		4,141.7		2,575.0		2,579.4	

Notes. Bereaved participant $n = 1{,}074$. All variables were measured in 2010/2012.

children that we examined in the current study. Indeed, according to research on parenthood and childlessness, having children typically accompany with broader social networks related to children and parenting (Umberson et al., 2010). Such networks presumably provide older parents more sources of social connections and support. Understanding such individual variation may help us better identify parents at greater risk for poorer well-being outcomes after losing a child prior to midlife.

Volunteering may help

We considered volunteering as a key social activity that may protect bereaved parents from long-term psychological ramifications of child loss prior to midlife. As expected, bereaved parents who volunteered 100+ hours per year (i.e. at least 2 h per week) reported fewer depressive symptoms and higher life satisfaction at baseline, when compared to bereaved parents who did not volunteer. Moreover, we found that volunteering 1–99 hours per year predicted increasingly higher life satisfaction in bereaved parents over time. Findings support and extend prior research that has primarily linked volunteering regularly to better health outcomes (Morrow-Howell et al., 2009). Some recent studies have documented the immediate salubrious effects of volunteering as older adults go through the widowhood transition (Carr et al., 2018; Li, 2007). In the current study, however, we found that child loss as a stressful event that occurred at the earlier stage of life had long-lasting effects on older adults' well-being. Theories explaining the benefits of volunteering have linked volunteering to increased sense of purpose, meaning in life, and generativity (Anderson et al., 2014; Burr et al., 2021; Gruenewald et al., 2016), which may be exactly what bereaved parents seek to achieve in later life. Indeed, according to the Dual Process Model of grief (Stroebe et al., 2007), volunteering may be a unique way for bereaved parents to distract from grief and take on new roles as a part of the restoration process. Additionally, child loss at younger ages may continue to serve as a chronic stressor that impacts parents' everyday lives as they grow older, due to the lack of parent-child support exchanges that are typically common in later life. Volunteering may compensate for the reduced social exchanges related to child loss, reduce bereaved parents' reactivity to chronic stress related to child loss, and modify their lifestyle and health behaviors in a positive way (Brown & Brown, 2017; Han et al., 2018; Huo et al., 2021).

We also found a significant moderating effect of the number of living children parents had on the effect of volunteering on bereaved older parents' life satisfaction. It seems that volunteering did not help those bereaved parents who had fewer children, which is surprising as volunteering may serve as a unique opportunity for these parents to expand their social networks, gain access to various resources, and reduce feelings of loneliness (Burr et al., 2021; Carr et al., 2015). This finding also contradicts the burgeoning notion that volunteering is particularly protective for disadvantaged individuals (e.g. those who are less educated, have lower income, or experience other unsatisfactory life conditions; Binder, 2015; Morrow-Howell et al., 2009). It is possible that bereaved parents with more children feel more supported in continuing their volunteer engagement and thus are able to obtain more benefits. Information on how long parents have volunteered, however, are not available in the data we used. According to the Volunteer Process Model (Snyder & Omoto, 2008), consequences of volunteering depend on why volunteer choose to start and their specific volunteer experiences, which may differ in bereaved parents by the number of adult children they have. Future research may consider relying on qualitative reports to further explore how bereaved parents may vary in appraisals of and motivations behind their engagement in volunteer activities.

Some additional limitations to the current study warrant consideration. Cause of death matters (Bonanno et al., 2004), but this information is unavailable in the data we used. We compared parents who had relatively more children vs. those who

had fewer children, but less is known about the most desperate parents who lost their only children due to a small subsample ($n = 79$). We did not have data on parents' volunteering history since child loss, and thus our findings should be interpreted with caution. Volunteering may not necessarily improve bereaved parents' well-being, but those bereaved parents who volunteered did report better well-being than their non-volunteer counterparts. Further, the current sample may suffer from selection bias. Prior research has associated parental bereavement prior to midlife with increased mortality risk (Donnelly et al., 2020; Song et al., 2019). It is possible that some parents who also experienced child loss prior to midlife but they passed away before the baseline, 2010/2012; there might be a mortality selection in the current sample. It is also worth noting that participants in the current sample differed in many ways from those excluded due to missing data and child loss post 50. The HRS only asked about the most recent year of a child's death. Some of the parents that were excluded due to a recent child loss after age 50 ($n = 1,206$) also had lost a child prior to midlife. Those parents who experienced child death both before and after age 50 may endure even worse psychological well-being; thus, the current study likely revealed conservative estimates of the psychological impact of child loss prior to 50. In addition, it remains unclear whether the parents lost their biological children or non-biological children, which might make a difference in the impact of child loss on parental well-being.

In conclusion, our study documents the long-lasting adverse effect of losing a child prior to midlife on parents' psychological well-being in their older age. Volunteering regularly may serve as a potential target of interventions (Owen et al., 2021) that could protect bereaved parents as they enter and enjoy late life, but the salubrious effect of volunteering does not apply to all bereaved parents. Indeed, this study identifies a particularly vulnerable sub-population of older bereaved parents—those who have fewer additional children, and calls for greater attention in research and intervention development to this population at greater risk for poorer well-being.

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ORCID

Meng Huo http://orcid.org/0000-0002-0060-1151
Kyungmin Kim http://orcid.org/0000-0002-0135-4367

Data availability statement

The current study drew on data from the *Health and Retirement Study* (HRS), which are publicly available on the HRS website (https://hrsdata.isr.umich.edu/data-products/public-survey-data?_ga=2.124584909.696739851.1613501184-1622400632.1584043405). The data we used for analysis and our analytic methods are described in detail in the text, and will be made available to other researchers upon request.
This study did not involve clinical trials, and was not pre-registered.

References

Alam, R., Barrera, M., D'Agostino, N., Nicholas, D. B., & Schneiderman, G. (2012). Bereavement experiences of mothers and fathers over time after the death of a child due to cancer. *Death Studies*, *36*(1), 1–22. https://doi.org/10.1080/07481187.2011.553312

Allen, J. A., & Mueller, S. L. (2013). The revolving door: A closer look at major factors in volunteers' intention to quit. *Journal of Community Psychology*, *41*(2), 139–155. https://doi.org/10.1002/jcop.21519

An, J. S., & Cooney, T. M. (2006). Psychological well-being in mid to late life: The role of generativity development and parent-child relationships across the lifespan. *International Journal of Behavioral Development*, *30*(5), 410–421. https://doi.org/10.1177/0165025406071489

Anderson, N. D., Damianakis, T., Kröger, E., Wagner, L. M., Dawson, D. R., Binns, M. A., Bernstein, S., Caspi, E., Cook, S. L, & BRAVO Team. (2014). The benefits associated with volunteering among seniors: A critical review and recommendations for future research. *Psychological Bulletin*, *140*(6), 1505–1533. https://doi.org/10.1037/a0037610

Binder, M. (2015). Volunteering and life satisfaction: A closer look at the hypothesis that volunteering more strongly benefits the unhappy. *Applied Economics Letters*, *22*(11), 874–885. https://doi.org/10.1080/13504851.2014.985364

Bonanno, G. A., Wortman, C. B., & Nesse, R. M. (2004). Prospective patterns of resilience and maladjustment during widowhood. *Psychology and Aging*, *19*(2), 260–271. https://doi.org/10.1037/0882-7974.19.2.260

Brown, S. L., & Brown, R. M. (2017). Compassionate neurobiology and health. In E. M. Seppälä, E. Simon-Thomas, S. L. Brown, M. C. Worline, C. D. Cameron, & J. R. Doty (Eds.), *The Oxford handbook of compassion science* (pp. 215–233). Oxford, UK: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190464684.013.13

Burr, J. A., Mutchler, J. E., & Han, S. H. (2021). Volunteering and health in later life. In K. F. Ferraro & D. Carr (Eds.), *Handbook of aging and the social sciences* (9th ed., pp. 303–319). Cambridge, MA: Academic Press. https://doi.org/10.1016/b978-0-12-815970-5.00019-x

Carr, D. (2020). Psychological resilience in the face of later-life spousal bereavement. In A. V. Wister & T. D. Cosco (Eds.), *Resilience and aging* (pp. 157–174). Berlin, Germany: Springer. https://doi.org/10.1007/978-3-030-57089-7_8

Carr, D., & Boerner, K. (2009). Do spousal discrepancies in marital quality assessments affect psychological adjustment to widowhood? *Journal of Marriage andFamily*,*71*(3),495–509.https://doi.org/10.1111/j.1741-3737.2009.00615.x

Carr, D. C., Fried, L. P., & Rowe, J. W. (2015). Productivity and engagement in an aging America: The role of volunteerism. *Daedalus*, *144*(2), 55–67. https://doi.org/10.1162/DAED_a_00330

Carr, D. C., Kail, B. L., Matz-Costa, C., & Shavit, Y. Z. (2018). Does becoming a volunteer attenuate loneliness among recently widowed older adults? *The Journals of Gerontology: Series B*, *73*(3), 501–510. https://doi.org/10.1093/geronb/gbx092

Donnelly, R., Umberson, D., Hummer, R. A., & Garcia, M. A. (2020). Race, death of a child, and mortality risk among aging parents in the United States. *Social Science & Medicine, 249*, 112853. https://doi.org/10.1016/j.socscimed.2020.112853

Fingerman, K. L., & Birditt, K. S. (2011). Adult children and aging parents. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology of aging* (7th ed., pp. 219–232). Cambridge, MA: Academic Press. https://doi.org/10.1016/B978-0-12-380882-0.00014-0

Fingerman, K. L., Huo, M., & Birditt, K. S. (2020). A decade of research on intergenerational ties: Technological, economic, political, and demographic changes. *Journal of Marriage and Family*, *82*(1), 383–403. https://doi.org/10.1111/jomf.12604

Fingerman, K. L., Pillemer, K. A., Silverstein, M., & Suitor, J. J. (2012). The baby Boomers' intergenerational relationships. *The Gerontologist*, *52*(2), 199–209. https://doi.org/10.1093/geront/gnr139

Fingerman, K. L., Pitzer, L. M., Chan, W., Birditt, K., Franks, M. M., & Zarit, S. (2011). Who gets what and why? Help middle-aged adults provide to parents and grown children. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *66*(1), 87–98. https://doi.org/10.1093/geronb/gbq009

Fiske, A., Wetherell, J. L., & Gatz, M. (2009). Depression in older adults. *Annual Review of Clinical Psychology*, *5*(1), 363–389. https://doi.org/10.1146/annurev.clinpsy.032408.153621

Floyd, F. F., Seltzer, M. M., Greenberg, J. S., & Song, J. (2013). Parental bereavement during mid-to-later life: Pre- to postbereavement function-

ing and intrapersonal resources for coping. *Psychology and Aging*, *28*(2), 402–413. https://doi.org/10.1037/a0029986

Giarrusso, R., Du, F., & Bengtson, V. L. (2004). The intergenerational-stake phenomenon over 20 years. *Annual Review of Gerontology and Geriatrics*, *24*(1), 55–76. https://doi.org/10.1891/0198-8794.24.1.55

Gruenewald, T. L., Liao, D. H., & Seeman, T. E. (2012). Contributing to others, contributing to oneself: Perceptions of generativity and health in later life. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *67*(6), 660–665. https://doi.org/10.1093/geronb/gbs034

Gruenewald, T. L., Tanner, E. K., Fried, L. P., Carlson, M. C., Xue, Q. L., Parisi, J. M., Rebok, G. W., Yarnell, L. M., & Seeman, T. E. (2016). The Baltimore experience corps trial: Enhancing generativity via intergenerational activity engagement in later life. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *71*(4), 661–670. https://doi.org/10.1093/geronb/gbv005

Ha, J.-H. (2008). Changes in support from confidants, children, and friends following widowhood. *Journal of Marriage and Family*, *70*(2), 306–318. https://doi.org/10.1111/j.1741-3737.2008.00483.x

Han, S. H., Kim, K., & Burr, J. A. (2018). Stress-buffering effects of volunteering on salivary cortisol: Results from a daily diary study. *Social Science & Medicine (1982)*, *201*, 120–126. https://doi.org/10.1016/j.socscimed.2018.02.011

Han, S. H., Kim, K., & Burr, J. A. (2020). Stress-buffering effects of volunteering on daily well-being: Evidence from the national study of daily experiences. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *75*(8), 1731–1740. https://doi.org/10.1093/geronb/gbz052

Huo, M., Han, S. H., Kim, K., & Choi, J. (2021). Functional limitations, volunteering, and diurnal cortisol patterns in older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *76*(9), 1893–1903. https://doi.org/10.1093/geronb/gbaa104

Idler, E. L., & Kasl, S. V. (1995). Self-ratings of health: Do they also predict change in functional ability? *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *50*(6), S344–S353. https://doi.org/10.1093/geronb/50b.6.s344

Infurna, F. J., & Luthar, S. S. (2017). The multidimensional nature of resilience to spousal loss. *Journal of Personality and Social Psychology*, *112*(6), 926–947. https://doi.org/10.1037/pspp0000095

Isherwood, L. M., King, D. S., & Luszcz, M. A. (2012). A longitudinal analysis of social engagement in late-life widowhood. *International Journal of Aging & Human Development*, *74*(3), 211–229. https://doi.org/10.2190/AG.74.3.c

Kim, K., Bangerter, L. R., Liu, Y., Polenick, C. A., Zarit, S. H., & Fingerman, K. L. (2017). Middle-aged offspring's support to aging parents with emerging disability. *The Gerontologist*, *57*(3), 441–450. https://doi.org/10.1093/geront/gnv686

Li, Y. (2007). Recovering from spousal bereavement in later life: Does volunteer participation play a role? *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *62*(4), S257–S266. https://doi.org/10.1093/geronb/62.4.s257

Maccallum, F., Galatzer-Levy, I. R., & Bonanno, G. A. (2015). Trajectories of depression following spousal and child bereavement: A comparison of the heterogeneity in outcomes. *Journal of Psychiatric Research*, *69*, 72–79. https://doi.org/10.1016/j.jpsychires.2015.07.017

Malkinson, R., & Bar-Tur, L. (2005). Long term bereavement processes of older parents: The three phases of grief. *OMEGA - Journal of Death and Dying*, *50*(2), 103–129. https://doi.org/10.2190/W346-UP8T-RER6-BBD1

McCarthy, M. C., Clarke, N. E., Ting, C. L., Conroy, R., Anderson, V. A., & Heath, J. A. (2010). Prevalence and predictors of parental grief and depression after the death of a child from cancer. *Journal of Palliative Medicine*, *13*(11), 1321–1326. https://doi.org/10.1089/jpm.2010.0037

McClatchey, I. S., King, S., & Domby, E. (2021). From grieving to giving: When former bereavement campers return as volunteers. *Omega*, *84*(1), 228–244. https://doi.org/10.1177/0030222819886734

Morrow-Howell, N., Hong, S. I., & Tang, F. (2009). Who benefits from volunteering? Variations in perceived benefits. *The Gerontologist*, *49*(1), 91–102. https://doi.org/10.1093/geront/gnp007

Owen, R., Berry, K., & Brown, L. J. (2021). Enhancing older adults' well-being and quality of life through purposeful activity: A systematic review of intervention studies. *The Gerontologist*, Advance online publication. https://doi.org/10.1093/geront/gnab017

Principi, A., Galenkamp, H., Papa, R., Socci, M., Suanet, B., Schmidt, A., Schulmann, K., Golinowska, S., Sowa, A., Moreira, A., & Deeg, D. J. H. (2016). Do predictors of volunteering in older age differ by health status? *European Journal of Ageing*, *13*(2), 91–102. https://doi.org/10.1007/s10433-016-0377-0

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385–401. https://doi.org/10.1177/014662167700100306

Rogers, C. H., Floyd, F. J., Seltzer, M. M., Greenberg, J., & Hong, J. (2008). Long-term effects of the death of a child on parents' adjustment in midlife. *Journal of Family Psychology (JFP): Journal of the Division of Family Psychology of the American Psychological Association (Division 43)*, *22*(2), 203–211. https://doi.org/10.1037/0893-3200.22.2.203

Smith, J., Ryan, L. H., Fisher, G. G., Sonnega, A., & Weir, D. R. (2017). *HRS Psychological and lifestyle questionnaire 2006–2016*. Ann Arbor, MI: Survey Research Center. https://hrs.isr.umich.edu/sites/default/files/biblio/HRS%202006-2016%20SAQ%20Documentation_07.06.17_0.pdf

Snyder, M., & Omoto, A. M. (2008). Volunteerism: Social issues perspectives and social policy implications. *Social Issues and Policy Review*, *2*(1), 1–36. https://doi.org/10.1111/j.1751-2409.2008.00009.x

Song, J., Mailick, M. R., Greenberg, J. S., & Floyd, F. J. (2019). Mortality in parents after the death of a child. *Social Science & Medicine, 239*, 112522. https://doi.org/10.1016/j.socscimed.2019.112522

Song, J., Floyd, F. J., Mailick, S., Greenberg, J. S., & Hong, J. (2010). Long-term effects of child death on parents' health related quality of life: A dyadic analysis. *Family Relations*, *59*(3), 269–282. https://doi.org/10.1111/j.1741-3729.2010.00601.x

Stroebe, M., Schut, H., & Stroebe, W. (2007). Health outcomes of bereavement. *The Lancet*, *370*(9603), 1960–1973. https://doi.org/10.1016/S0140-6736(07)61816-9

Taniguchi, H. (2012). The determinants of formal and informal volunteering: Evidence from the American Time Use Survey. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, *23*(4), 920–939. https://doi.org/10.1007/s11266-011-9236-y

Tang, F., Copeland, V. C., & Wexler, S. (2012). Racial differences in volunteer engagement by older adults: An empowerment perspective. *Social Work Research*, *36*(2), 89–100. https://doi.org/10.1093/swr/svs009

Thoits, P. A. (2012). Role-identity salience, purpose and meaning in life, and well-being among volunteers. *Social Psychology Quarterly*, *75*(4), 360–384. https://doi.org/10.1177/0190272512459662

Umberson, D., Donnelly, R., Xu, M., Farina, M., & Garcia, M. A. (2020). Death of a child prior to midlife, dementia risk, and racial disparities. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *75*(9), 1983–1995. https://doi.org/10.1093/geronb/gbz154

Umberson, D., Olson, J. S., Crosnoe, R., Liu, H., Pudrovska, T., & Donnelly, R. (2017). Death of family members as an overlooked source of racial disadvantage in the United States. *Proceedings of the National Academy of Sciences of the United States of America*, *114*(5), 915–920. https://doi.org/10.1073/pnas.1605599114

Wijngaards-de Meij, L., Stroebe, M., Schut, H., Stroebe, W., Bout, van den, J., Heijden, van der, P. G. M., & Dijkstra, I. (2008). Parents grieving the loss of their child: Interdependence in coping. *The British Journal of Clinical Psychology*, *47*(1), 31–42. https://doi.org/10.1348/014466507X216152

Yin, Q., Zhang, H., Shang, Z., Wu, L., Sun, Z., Zhang, F., Zhou, Y., Song, X., & Liu, W. (2020). Risk factors for PTSD of Shidu parents who lost the only child in a rapid aging process: A cross-sectional study. *BMC Psychiatry*, *20*(1), 37. https://doi.org/10.1186/s12888-020-2446-3