Sasson, I., & Umberson, D.J. (2014). Widowhood and depression: new light on gender differences, selection, and psychological adjustment. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *69(1)*, 135–145, doi:10.1093/geronb/gbt058. Advance Access publication June 28, 2013

Widowhood and Depression: New Light on Gender Differences, Selection, and Psychological Adjustment

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Objectives. To document short- and long-term trajectories of depressive symptoms following widowhood and to test whether these trajectories vary by gender and anticipatory spousal loss.

Method. Eight waves of prospective panel data from the Health and Retirement Study, over a 14-year period, are used to evaluate gender differences in depressive symptoms following widowhood in late midlife. Short-term trajectories are modeled using a linear regression of change in Center for Epidemiologic Studies Depression (CES-D) score on duration of widowhood. Long-term trajectories are modeled using a mixed-effects hierarchical linear model of CES-D scores over time.

Results. We find no gender differences in bereavement effects on depressive symptoms in either short or long term, net of widowhood duration. When spousal death is anticipated, both men and women return to their prewidowhood levels of depressive symptoms within 24 months of becoming widowed. Across marital groups, the continuously married are better off compared with the widowed even prior to spousal loss, whereas early, long-term widowhood is associated with worse outcomes compared with late widowhood.

Discussion. Although men and women do not differ in trajectories of depressive symptoms following widowhood, given similar circumstances, women are distinctly disadvantaged in that they are more likely to become widowed and under less favorable conditions.

Key Words: Adjustment—Bereavement—Depression—Gender differences—Widowhood.

THE death of a spouse is a stressful life event that marks a turning point in the life course, often involving transitions and adaptations in social roles for the surviving partner (Carr & Utz, 2001). Widowhood is associated with increased financial strain, the assumption of new tasks in household management, and changes in social relationships, all of which may exacerbate or mitigate psychological distress (Umberson, Wortman, & Kessler, 1992). Because both social roles and mediating factors in adjustment to widowhood vary by gender, it has long been hypothesized that men and women experience bereavement in different ways that are reflected in depressive symptoms. However, evidence for gender differences in depression following widowhood has been inconsistent. Studies generally find a stronger adverse effect for men (Lee, Willetts, & Seccombe, 1998; Umberson et al., 1992; van Grootheest, Beekman, Broese van Groenou, & Deeg, 1999) and a few find a greater impact on women (Chou & Chi, 2000); yet still others find that gender differences precede, rather than follow, widowhood (Lee & DeMaris, 2007).

Differences in methodology and study populations may account for such inconsistent results. Most evidence relies on retrospective cross-sectional data, and only more recently on prospective panel data (e.g., Chou & Chi, 2000; Lee & DeMaris, 2007), albeit limited to two points in time. In this study, we use eight waves of prospective longitudinal data from the Health and Retirement Study to document both short- and long-term trajectories of depressive symptoms following widowhood in late midlife (defined as age 52–63 at baseline). In addition, we test whether these trajectories vary by gender and whether unanticipated spousal loss is associated with delayed psychological adjustment to widowhood. Given the aging of the U.S. population and the high prevalence of widowhood, it is particularly important to identify groups that may be vulnerable following widowhood. Moreover, although it is important to document short- and long-term vulnerability to widowhood, we must go beyond identifying gendered population patterns to explain why these patterns exist.

Widowhood is associated with a multitude of adverse physical and mental health outcomes including psychological distress, physician visits and institutionalization, and higher rates of morbidity and mortality (Hughes & Waite, 2009; Hagedoorn et al., 2006; Manor & Eisenbach, 2003; Prigerson, Maciejewski, & Rosenheck, 2000; Wilcox et al., 2003; Zhang & Hayward, 2006). Prevalence rates of clinical depression within the first year of widowhood are estimated between 15% to 30% across studies, though subclinical elevation in depressive symptoms is even more common (Carr & Utz, 2001). Although depressive symptoms diminish over time among the widowed, they seem to remain high for many years following widowhood, at least in comparison with married persons in cross-sectional studies (Umberson et al., 1992; van Grootheest et al., 1999).

Received November 1, 2012; Accepted May 22, 2013
Decision Editor: Gary Lee, PhD

U.S. national statistics reveal that, as of 2009, the median age at widowhood from first marriage was 61.1 for men and 59.4 for women (Kreider & Ellis, 2011). Gender influences the timing of widowhood and the social and psychological experience of widowhood (Lee & DeMaris, 2007; Lee et al., 1998; Umberson et al., 1992; van Grootheest et al., 1999). Widowhood impacts multiple life domains, which may moderate or exacerbate short- and long-term effects on the psychological well-being of the bereaved. Following widowhood, women are more likely than men to receive social support from their children (Umberson et al., 1992). In addition, widowhood often increases economic hardship (Lillard & Waite, 1995; Stimpson, Kuo, Ray, Raji, & Peek, 2007; Utz, 2006), which may, in turn, affect psychological well-being. Women are especially likely to suffer from economic strains when widowed (Lee et al., 1998). Conversely, men may be more likely to have difficulties handling household tasks previously performed by their wives (Umberson et al., 1992). However, it remains unclear whether widowhood has stronger or more prolonged adverse effects on the psychological well-being of men or women.

Previous studies attributed observed gender differences in depression following widowhood to differences in gender roles or disparities (e.g., managing household tasks, economic hardship, and social support). Instead, we use a life course perspective that argues that significant life events, such as widowhood, alter social contexts in ways that may trigger turning points in trajectories of mental health and psychological well-being (Elder & O'Rand, 1995; Kessler, 1997). More importantly, it suggests that the social context of widowhood differs in systematic ways across social groups, contributing to cumulative disadvantage over time for some (Dannefer, 2003) and ultimately creating social disparities in psychological well-being.

In accordance with the life course perspective, this study emphasizes the timing of spousal loss and widowhood duration. Our main argument is that men and women experience widowhood at different stages of the life course, which in turn leads to diverging consequences with respect to their psychological well-being. Furthermore, failing to account for widowhood duration conjoins a heterogeneous population of widows and widowers despite their different characteristics. Some widows and widowers are "transient" (that is, they remarry or die soon after), whereas others may spend decades widowed. In other words, we have to distinguish between the short-term bereavement effect on psychological well-being and the long-term effect of widowhood as a marital status.

We stress that the life course perspective does not exclude previous explanations of observed gender differences, but rather incorporates these explanations. For example, the experience of widowhood in early stages of the life course may be unexpected and involve delayed psychological adjustment; the timing of widowhood then interacts with gendered roles (e.g., parenting) and disparities (e.g., economic), which serve to exacerbate psychological outcomes. Thus, although widows generally experience more economic hardship than do widowers (Lee et al., 1998), the degree of such gender disparity may vary at different stages of the life course.

We now review findings from previous studies, with particular attention to conceptual and methodological issues related to the timing and duration of widowhood, as prescribed by the life course perspective. Studies vary significantly in both their study population (e.g., age coverage, local or national surveys) and their methodology (retrospective or prospective). Cross-sectional studies often find that men are more vulnerable to widowhood than women. Umberson and colleagues (1992) found that, among U.S. respondents aged 25 and older, men had higher levels of depressive symptoms, but had been widowed a shorter time compared with women. Among Dutch, older adults aged 55–85, van Grootheest and colleagues (1999) found that depressive symptoms among widowers continue to be higher compared with married men 4 years or longer after widowhood but not for women. Similarly, a community survey from northern Florida reveals that widowhood is more depressing for men aged 65 and older (Lee et al., 1998). Prospective longitudinal studies paint a different picture. A panel study based in Hong Kong (Chou & Chi, 2000) revealed that, within 3 years of widowhood, women aged 70 and older experienced a greater increase in depressive symptoms compared with men. In contrast, using a U.S. national survey at ages 55 and older, Lee and DeMaris (2007) found no gender difference in the effect of widowhood on change in depressive symptoms within 6 years of widowhood (but did find that men who eventually become widowed had significantly higher symptoms at *baseline* compared with both continuously married men and all women). However, both panel studies were limited to relatively small samples of widowed respondents and only two waves of data.

Although depressive symptoms associated with widowhood are expected to diminish over time, possibly returning to their baseline levels after a period of adjustment, cross-sectional data cannot provide information about those baseline levels. Prospective panel data are required to observe the level of depressive symptoms prior to and after the loss of a spouse (Kessler, 1997; Stroebe, Stroebe, & Schut, 2003). Controlling for baseline depressive symptoms is especially important when assessing gender differences, as women tend to have higher rates of depression compared with men throughout the life course (Mirowsky, 1996; Piccinelli & Wilkinson, 2000). Thus, in order to establish that gender differences in response to widowhood indeed exist, we have to compare the *change* in depressive symptoms among widows with the equivalent *change* among widowers.

In this study, we use prospective panel data with a maximum of eight measurements per respondent over a 14-year period. Relying on rich longitudinal data allows us not only to document individuals' detailed trajectories of depressive symptoms but also to observe *within-person*

change in depressive symptoms that takes place in close proximity to the transition into widowhood. At the same time, it is important to compare individual trajectories of depressive symptoms between those who transition into widowhood and those who do not, as depressive symptoms tend to increase beyond middle age (Mirowsky & Ross, 1992; Yang, 2007). These nuances are generally lost when using cross-sectional data or even two waves of panel data because the effect of widowhood duration has to be inferred by comparing different individuals to one another, rather than observing gradual, person-specific change over time.

Aside from documenting detailed trajectories of depressive symptoms following widowhood, the use of prospective panel data allows us to examine the degree to which selection into and out of widowhood varies by gender. Selection directly affects widowhood duration and may compromise previous conclusions from retrospective cross-sectional studies. Specifically, both remarriage and mortality are thought to be higher among widowers than among widows (Lee et al., 1998; Umberson et al., 1992). Higher rates of remarriage are likely to select out the most well-adjusted widowers. Mortality, on the other hand, would select out the least physically healthy men who, quite possibly, may be more likely to suffer from psychological distress (Kessler, Ormel, Demler, & Stang, 2003). If men spend a shorter time in widowhood and the effects of bereavement diminish over time, gender differences estimated in a cross-section may be overstated; men in the sample will likely have had a shorter time to adapt to widowhood compared with women. Failing to account for the duration of widowhood in retrospective studies may result in seemingly different outcomes for men and women (Umberson et al., 1992).

Variation in age at widowhood across studies is also bound to affect conclusions regarding psychological adjustment. Younger widows and widowers may suffer more severe consequences compared with older adults who become widowed (Carr & Utz, 2001). Early widowhood is likely to be sudden or unexpected, which has been associated with more psychological distress and difficulty in adjustment (Carnelley, Wortman, & Kessler, 1999).

In sum, the widowed population is highly heterogeneous with respect to the timing and duration of widowhood, which results in two competing selection processes: (a) *duration effect*, whereby men's shorter widowhood duration leaves them less time to adjust, so they appear more vulnerable compared with women who have been widowed longer and (b) *timing effect*, whereby women's selection into early widowhood results in higher vulnerability compared with men, if indeed early widowhood leads to more adverse outcomes. The timing effect does not state that women are necessarily more vulnerable to early widowhood than men, but simply that more women than men enter widowhood through this pathway.

Widowhood in young adulthood or midlife is likely to have more severe consequences for the well-being of the surviving spouse (Carr & Utz, 2001). Although early widowhood does not necessarily imply sudden spousal loss, the latter may prove important in understanding subsequent psychological adjustment to widowhood. When spousal death is anticipated, psychological adjustment to widowhood may be easier because survivors had more time to prepare emotionally for the loss (Carnelley et al., 1999; Carr, 2012). However, this remains a contested claim that is likely to vary across dimensions of psychological well-being (Carr, House, Wortman, Nesse, & Kessler, 2001). Whereas other studies often equate sudden death with a particularly violent death, or one due to unnatural causes (e.g., Carr et al., 2001), we conceptualize sudden death as unanticipated in a broader sense: either as untimely death (that is, death that is uncharacteristic of the life course stage) or death that occurs without a prolonged period of illness preceding it. We speculate that unanticipated death should have a greater adverse effect on the surviving spouse's psychological adjustment following widowhood.

Thus far we have focused primarily on gendered forces of selection that concern the widowed population. Another important form of selection concerns the commonly used counterfactual to the widowed, namely—the continuously married. Compared with those who remain married through old age, those who become widowed early in life may possess a unique set of characteristics. For example, preexisting socioeconomic factors may enhance or buffer any adverse effects of widowhood on depressive symptoms and, at the same time, also influence selection into widowhood, depression, mortality, and related health outcomes (Elwert & Christakis, 2008; Goldman, 1993; Pienta & Franks, 2006). Therefore, selection processes hamper attempts to explain widowhood outcomes based solely on the continuously married as a counterfactual. Thus, comparing second-order gender differences (i.e., the difference between married and widowed men to difference between married and widowed women) can only go so far. In order to advance our understanding of gender differences in widowhood, we adopt several complementary approaches: first, we compare within-person change in depressive symptoms between widowed men and women; second, we compare the widowed to the continuously married *before and after* becoming widowed; and third, we compare late widowhood to early, long-term widowhood.

In summary, this article, motivated by a life course perspective, aims to piece together in a single study several factors that are thought to determine gender differences in depression following widowhood. In addition to documenting short- and long-terms trajectories of depressive symptoms surrounding widowhood in late midlife, we directly test the following hypotheses:

H1: *Gender differences exist in selection into and out of widowhood, potentially biasing previous results from retrospective studies.*

H2: *Gender differences in depressive symptoms following widowhood manifest over the short and long term, but could work in either direction, net of widowhood duration and timing.*
H3: *Unanticipated spousal loss is associated with a higher increase in depressive symptoms and delayed psychological adjustment.*
H4: *Early and long-term widowhood has more adverse consequences for psychological adjustment compared with late widowhood.*
H5: *Those who become widowed are select in several ways compared with the continuously married prior to becoming widowed.*

Method

Data

Analyses are based on data from the Health and Retirement Study (HRS), a longitudinal, nationally representative survey of noninstitutionalized older adults in the contiguous United States (RAND, 2011). The HRS is a multistage probability sample oversampling blacks, Hispanics, and residents of Florida; its original cohort, aged 51–61 at baseline, has been followed at 2-year intervals since its inception in 1992. Because our key measure of depressive symptoms was consistently assessed starting in the second wave of data collection (Steffick, 2000), we use the 1994 wave as our baseline sample with a 14-year follow-up period for a total of eight waves of data. A major advantage of the HRS is that spouses of eligible respondents were also surveyed, even when not age-eligible, and followed through the study period. However, we limit our sample to age-eligible, non-Hispanic whites and blacks. Information on noneligible spouses (e.g., spouse's time of death and prior health status) is used only in as much as it serves to assess primary respondents' outcomes. Of the baseline sample ($N = 7{,}933$), 929 respondents transitioned into widowhood; in 93.1% of those cases, the spouse's date of death was recorded by month and year in an exit survey. We exclude from the analysis seven respondents who were widowed twice during follow-up.

With the exception of sample descriptive statistics, all analyses are weighted and adjusted for sampling design. Baseline weights are poststratified to the March 1994 Current Population Survey (Health and Retirement Study, n.d.). In longitudinal analyses, we calculated and rescaled subsequent person-weights at each wave to represent the probability of response in a given wave conditional on baseline inclusion (for details, see Heeringa, West, & Berglund, 2010, p. 389).

Measures

Dependent variable.—Our main outcome is depressive symptoms, measured using an eight-item version of the Center for Epidemiologic Studies Depression (CES-D) scale. The abbreviated version has been shown to be reliable and comparable to longer CES-D formats (Turvey, Wallace, & Herzog, 1999). Respondents were asked a series of "yes/no" questions about feelings and symptoms experienced in the past week. The scale, ranging from 0 to 8, consists of a sum of those positive (felt happy, enjoyed life) and negative (felt depressed, felt sad, felt lonely, sleep was restless, everything was an effort, couldn't get going) dichotomous indicators.

Independent and control variables.—The primary independent variables are gender and marital status. The latter was recorded at each wave, allowing the construction of respondents' marital biographies, including transitions into and out of widowhood. Three marital groups are considered: late widowhood (i.e., transition into widowhood during follow-up), early and long-term widowhood (widowed at baseline and continuously thereafter), and continuously married across all waves. In addition, we indirectly measure unanticipated spousal loss by including the deceased spouse's self-rated health (a five-level ordinal scale ranging from *poor* to *excellent*) in the wave just prior to death. Presumably, poorer health would be more indicative of forewarning, whereas better health would suggest unanticipated or sudden death.

Finally, the analyses control for common sociodemographic confounders including age, race, and socioeconomic status (SES). SES is measured by educational attainment and total household income, a comprehensive measure that includes the respondent's earnings, spousal earnings, capital income, pensions and annuities, social security payments, workers' compensation, and other income. Because years of education are truncated at 17 in the HRS, educational level is treated categorically (11 years or fewer, 12, 13–15, and 16+). When modeling short-term CES-D trajectories, household income is taken from the wave immediately preceding widowhood, whereas long-term analyses treat income as a time-varying covariate.

Analytic Plan

The analytic plan addresses three specific goals: estimating selection into and out of widowhood in the HRS cohort, assessing the short-term (i.e., within 30 months) bereavement effect on depressive symptoms, and documenting long-term (up to 14 years) trajectories of depressive symptoms following widowhood.

Selection into and out of widowhood.—To address our first hypothesis (H1), binomial logit models are used to estimate the probability of selection into and out of widowhood by gender *conditional* on inclusion in the HRS. We differentiate between widowhood at baseline (mean age of 57), where the transition from marriage to widowhood

is censored, and late widowhood, where the transition to widowhood is observed during follow-up. Similar models estimate the probability of exiting widowhood through remarriage or mortality.

Short-term bereavement effect on depressive symptoms.—Because the measurement intervals, 2 years apart on average, preclude a short-term longitudinal assessment of respondents' adjustment to widowhood, we adopt an alternative approach. We take advantage of the variation in time between transition into widowhood and the next HRS interview, ranging from 1 to 30 months across widowed respondents, to assess the short-term bereavement effect on depressive symptoms. By pooling all transitions into widowhood across waves, a hypothetical trajectory of change in depressive symptoms following widowhood can be constructed, net of sociodemographic factors. To control for respondents' preexisting level of depressive symptoms, the *change* in CES-D score (i.e., difference between postwidowhood and prewidowhood scores) is used as the outcome variable in a linear regression. This approach allows a direct test of gender differences in change in depressive symptoms, net of duration of widowhood (H2). In addition, the spouse's self-rated health status prior to death serves as a rough indication of whether death was anticipated or not (H3). Of the 929 respondents who transitioned into widowhood during the follow-up period, we retain 729 cases in which CES-D score was measured in the waves immediately before and after spousal loss. As an alternative to listwise deletion, we also estimate equivalent (unweighted) models using full information maximum likelihood, including all 929 cases, and arrive at the same substantive conclusions.

Long-term effect of widowhood on depressive symptoms.—To document the long-term trajectories of depressive symptoms, prior to and after widowhood, we use a linear multilevel model for change (Singer & Willett, 2003). Trajectories of depressive symptoms are estimated using a two-level model: at Level 1, within-person trajectories of CES-D scores are approximated as a linear function of time and at Level 2, between-person differences in the intercept and slope of CES-D can be evaluated. Both time-invariant (e.g., race, gender, and educational level) and time-varying (e.g., widowhood status and duration, household income) covariates can be incorporated into the hierarchical model. The two-level model specification is as follows:

$$\text{Level 1}: Y_{it} = \gamma_{0i} + \gamma_{1i} T_{it} + \sum_{p} \gamma_{pi} Z_{pit} + \varepsilon_{it}$$

$$\text{Level 2}: \gamma_{0i} = \beta_{00} + \sum_{k} \beta_{0k} X_{ki} + u_{0i}$$

$$\gamma_{1i} = \beta_{10} + \sum_{m} \beta_{1m} X_{mi} + u_{1i}$$

where Y_{it} is CES-D score for individual i at time t, γ_{0i} and γ_{1i} are random effects, T_{it} is the time measurement for individual i on occasion t, γ_{pi} is Level 1 fixed effects corresponding to p time-varying covariates, Z_{pit}, and ε_{it} is the error term for observation t for individual i. Level 2 equations can be interpreted as in simple regression models, with random effects regressed on person-level covariates (X_i) that are fixed across waves. This specification is particularly suitable for handling panel data because its composite error term allows for interdependence between observations *within* individual, as well as heteroskedasticity with time (Singer & Willett, 2003). Maximum likelihood estimation is used in order to deal with data missing at random (Schafer & Graham, 2002). For robustness, we later estimated an equivalent random-effects Poisson regression, which yielded similar substantive results.

The hierarchical model describes how individuals experience depressive symptoms over time, both prior to and after becoming widowed, by including time-varying indicators of widowhood status and duration. The effect of widowhood on depression can be conceptualized as (a) an abrupt elevation in depressive symptoms immediately following spousal loss, characterized by a change in the individual intercept of CES-D; (b) an enduring effect on one's trajectory, characterized by a change in the individual slope of CES-D over time; (c) a combination of both effects, characterized by an abrupt response to widowhood followed by a slow decline in depressive symptoms. All three possibilities can be directly tested within the multilevel model framework. In addition, the initial level and rate of change of depressive symptoms can be compared across marital groups: late widowhood, early and long-term widowhood (H4), and continuously married (H5). The existence of between-group differences in depression prior to widowhood may suggest that selection processes are at play (or alternatively, that depressive symptoms are associated with spouse's illness or caregiving preceding death).

Results

Descriptive Statistics

Table 1 summarizes descriptive statistics for three marital groups in the HRS cohort: late widowhood, early and long-term widowhood ("early widowhood" hereafter), and continuously married. Whereas the late-widowhood group is of primary interest, the others serve as points of reference for the least and most advantaged marital groups in the population. Indeed, the late-widowhood group falls between the early widowhood and continuously married groups on all variables. The mean age at baseline is generally similar across groups although the continuously married are younger by about 1 year. Not surprisingly, women are greatly overrepresented in both widowed groups: 87% in early widowhood and 75% in late widowhood. Blacks are also overrepresented in early and late

Table 1. Sample Descriptive Statistics (Unweighted), Health and Retirement Study, 1994–2008

Variable	Continuously married	Continuously widowed	Transition into widowhood
	Mean/Proportion	Mean/Proportion	Mean/Proportion
Age	57.3 (3.2)[a]	58.8 (3.0)	58.0 (3.1)
Women	0.44	0.87	0.75
Black	0.12	0.36	0.19
Education (years)			
≤11	0.20	0.37	0.30
12	0.39	0.35	0.43
13–15	0.20	0.17	0.16
16+	0.21	0.11	0.11
Household income (1994)[b]	68.3 (94.9)	20.1 (24.8)	44.2 (48.3)
CES-D score[c]			
1994	0.90 (1.57)	2.13 (2.45)	1.40 (2.03)
1996	0.89 (1.51)	1.80 (2.10)	1.46 (1.97)
1998	1.15 (1.64)	2.06 (2.17)	1.87 (2.08)
2000	1.07 (1.57)	1.93 (2.13)	1.86 (2.05)
2002	1.04 (1.63)	1.77 (1.99)	1.89 (2.14)
2004	0.97 (1.60)	1.74 (2.05)	1.87 (2.15)
2006	0.96 (1.56)	1.77 (2.07)	1.89 (2.19)
2008	1.00 (1.61)	1.61 (1.86)	1.66 (2.06)
N (at baseline)	4,642	504	929

Notes. [a]*SD* in parentheses.
[b]Household income in thousand nominal U.S. dollars.
[c]Effective sample size may be smaller for CES-D scores.

widowhood (36% and 19%, respectively) compared with the married group (12%). Both widowed groups are disadvantaged in terms of education, with over 70% of respondents having a high school degree or lower compared with 59% in the married group. Mean household income at baseline is $20,079 in the early-widowhood group, compared with $44,252 in the late-widowhood group and $68,303 in the married group. A similar gradient exists across marital groups with respect to CES-D score. For the married group, CES-D seems relatively constant, with values close to 1.00. The early-widowhood group starts with the highest mean score of 2.13, which seems to decline over time. The late-widowhood group starts at 1.40, shows an increase in mean number of depressive symptoms, and ends close to the early-widowhood group at 1.66.

Although unweighted and unadjusted for covariates, these figures suggest that the late widowhood group is already select in several ways prior to experiencing spousal loss. Compared with the continuously married, it is predominantly women, overrepresents blacks, the less educated, and has higher levels of depressive symptoms at baseline. Because women, on average, exhibit higher levels of depressive symptoms than men, we cannot rule out that some of these group differences are driven by disproportional representation of women in widowhood. The following sections provide multivariate analyses to address this issue.

Selection Into and Out of Widowhood by Gender

Descriptive statistics suggest that both early- and late-widowhood vary by gender. We first consider to what extent gender is associated with selection into and out of widowhood, a common concern in retrospective cross-sectional studies. By using prospective longitudinal data, we are able to provide rudimentary evidence of the degree to which gender selection occurs in the HRS cohort. Gender differences in the timing of widowhood may be crucial in understanding gendered patterns of depression.

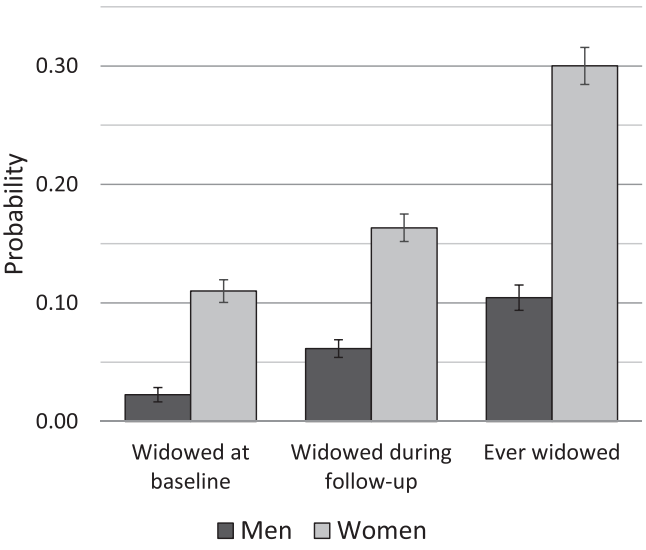

Figure 1. Predicted probability of widowhood by gender in HRS cohort[a]. [a]Follow-up period from 1994 to 2008; All probabilities are conditional on survival to inclusion in sample and adjusted for sampling design and probability weights; Error bars represent 95% CI.

Figure 1 shows the predicted probability of widowhood by gender for the HRS cohort. At baseline, 2.3% of men are widowed compared with 11.0% of women (with 4.5%

and 14.5% ever widowed, respectively; not shown in figure). Gender differences are also evident in the probability of becoming widowed during follow-up: 6.1% of men and 16.3% of women experienced the loss of a spouse between 1994 and 2008 (at that time, 10.4% of men and 30.0% of women were ever widowed). Clearly, at the cohort level, women are significantly more likely than men to experience widowhood and to become widowed at an earlier age. For both early and late widowhood, we now explore the extent to which remarriage and mortality vary by gender to induce differential selection out of widowhood.

We find that 18.8% (confidence interval [CI]: 8.4%–29.2%) of men and 7.2% (CI: 4.8%–9.7%) of women in the HRS cohort who were widowed at baseline remarried within 14 years (not shown in table/figure). Similarly, in the late-widowhood group, 18.1% (CI: 11.7%–24.6%) of men remarried during the remainder of the follow-up period compared with 5.9% (CI: 4.2%–7.6%) of women. Despite the small number of respondents in the sample who remarry, gender differences in remarriage are statistically significant. With respect to mortality selection, we find statistically significant evidence for gender differences only among the late-widowhood group: 16.3% (CI: 11.6%–21.0%) of men died during follow-up, following widowhood, compared with 10.0% (CI: 7.3%–12.7%) of women. However, among the early-widowhood group, we find no difference in the probability of mortality by gender. We also find no gender difference in sample dropout. In summary, these results support H1, whereby women are more likely to be widowed early and less likely to exit widowhood through remarriage or mortality.

Short-Term Effects of Widowhood on Depression

In Table 2, Model A estimates the *change* in CES-D score by duration of widowhood in months, net of sociodemographic variables. Results suggest that the increase in depressive symptoms following widowhood tends to diminish over time (linearly in Models A-B, whereas in Model C, the quadratic term becomes significant). Furthermore, the change in depressive symptoms does not vary by gender, controlling for duration of widowhood (i.e., does not support H2). In Model B, we test whether socioeconomic status, measured by educational level and total household income preceding widowhood, mediates the short-term bereavement effect. None of the regression coefficients associated with education or household income is statistically significant, suggesting that short-term bereavement effects do not vary by socioeconomic status.

Finally, in Model C, we test whether the deceased spouse's self-rated health status prior to death affects postwidowhood change in depressive symptoms. If the deceased spouse suffered from poor health just prior to death, the loss may have been anticipated by the surviving spouse. Net of other factors, spouse's prior self-rated health has a positive and significant effect on the change in depressive symptoms. Thus, as predicted by H3, among the widowed the increase in depressive symptoms is largest for respondents whose spouses were in excellent health just prior to death. It may be the case that respondents with spouses in poor health were already more depressed prior to widowhood, hence showing only a modest increase in depressive symptoms following widowhood. Additional analyses (not shown here) support this claim, yet the effect of spouse's self-rated health remains positive and significant regardless of the respondent's initial level of depression. Figure 2 shows the predicted trajectories of change in CES-D score within 30 months of transitioning into widowhood. On average, respondents whose spouses were in poor health before dying experience an increase of roughly two depressive symptoms following widowhood, but return to their prior level of depression within approximately

Table 2. Linear Regression of Change in CES-D Score Following Widowhood[a,b]

Variable	Model A	Model B	Model C
Time widowed (in months)	–0.173 (3.34)**	–0.173 (3.26)**	–0.204 (4.11)***
Time widowed squared	0.003 (1.66)	0.003 (1.62)	0.005 (2.86)**
Age at widowhood	–0.042 (2.26)*	–0.041 (2.12)*	–0.046 (2.43)*
Women	–0.129 (0.59)	–0.122 (0.55)	–0.177 (0.80)
Black	–0.140 (0.55)	–0.149 (0.55)	–0.104 (0.39)
Education (years)			
≤11		0.011 (0.04)	0.077 (0.28)
12		(ref)	
13–15		0.046 (0.20)	0.031 (0.14)
16+		–0.233 (0.74)	–0.227 (0.75)
Household income prior to widowhood		0.000 (0.70)	0.000 (0.40)
Spouse's prior self-rated health status			0.377 (4.14)***
Constant	5.302 (3.84)**	5.168 (3.65)**	4.810 (3.37)**
N	729	729	688
R^2	0.096	0.097	0.122

Notes. [a]Two-tailed significance level: *$p < .05$; **$p < .01$; ***$p < .001$.
[b]*t* statistics in parentheses.

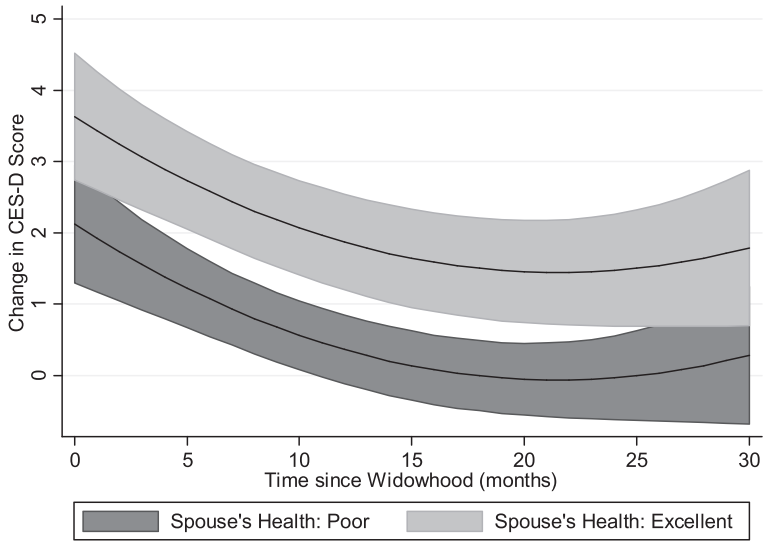

Figure 2. Predicted change in CES-D score following widowhood (Model C)[a]. [a]Centered at mean age, median household income, and 12 years of education; Shaded regions reflect 95% confidence bands.

Table 3. Hierarchical Linear Regression of CES-D Score Over Time and Marital Group

Fixed effects on intercept	Estimate	Fixed effects on time slope	Estimate
Intercept (β_{00})	0.852 (22.41)***[a,b]	Intercept (β_{10})	0.010 (−2.74)**
Age at baseline (centered)[c]	−0.015 (−2.29)*	Age at baseline (centered)[c]	0.002 (3.05)**
Women	0.204 (4.82)***	Women	0.004 (1.10)
Black	0.424 (5.97)***	Black	−0.020 (−3.22)**
Marital status		Marital status	
Continuously married	(ref)	Continuously married	(ref)
Continuously widowed	0.763 (7.29)***	Continuously widowed	−0.024 (−2.70)**
Transition into widowhood	0.274 (4.04)***	Transition into widowhood	0.028 (3.16)**
Education (years)		Education (years)	
≤11	0.552 (8.67)***	≤11	0.003 (−0.53)
12	(ref)	12	(ref)
13–15	−0.219 (−4.17)***	13–15	0.009 (1.89)
16+	−0.337 (−6.36)***	16+	−0.003 (−0.62)
Time-varying covariates		Variance components	
Widowhood abrupt effect	0.662 (8.19)***	σ_0^2	1.307 (0.066)[d]
Widowhood duration effect	−0.131 (−10.25)***	σ_1^2	0.004 (0.001)
Household income	−0.0001 (−1.52)	σ_{01}	−0.011 (0.0005)
		σ_ε	1.432 (0.029)
N	5,917		

Notes. [a]Two-tailed significance level: *$p < .05$; **$p < .01$; ***$p < .001$.
[b]Z-statistics in parentheses.
[c]Age at baseline centered at 57.
[d]Variance components: SE in parentheses.

2 years. At the other extreme, respondents whose spouses were in excellent health experience an increase of about 3.6 depressive symptoms during the first month of widowhood; although their depressive symptoms diminish over time, they do not appear to subside completely within 30 months.

Long-Term Effects of Widowhood on Depression

The long-term analysis compares CES-D trajectories across marital groups and pre- and postwidowhood for the late-widowhood group. Results are presented in Table 3, and predicted trajectories are illustrated in Figure 3. The top left column of Table 3 reflects baseline differences in CES-D scores by gender, race, SES, and marital group. Net of those factors, women show significantly higher levels of depressive symptoms at baseline than men (and similarly, blacks show higher baseline symptoms than whites). The early-widowhood group scores 0.76 points higher on the CES-D scale compared with the continuously married. Similarly, the late-widowhood group exhibits, on

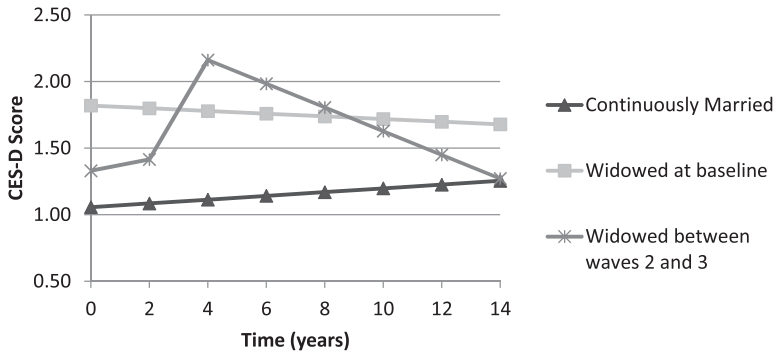

Figure 3. Long-term trajectories of depressive symptoms by marital group (women)[a]. [a]Predicted CES-D score trajectories for white women, aged 57 at baseline, with 12 years of education and random effects set at their (zero) means.

average, 0.27 more symptoms compared with the married group *prior* to becoming widowed (in accordance with H5). Following Lee and DeMaris (2007), we further tested whether this "anticipation effect" is more pronounced for men than for women, but found no significant difference ($p = .213$).

The right-hand column of Table 3 shows fixed effects on the time slope. The intercept, β_{10}, reflects the average annual change in CES-D score when all other covariates are set to zero. Evidently, there is no significant gender difference with respect to change in depressive symptoms over time (i.e., the gender effect on the time slope). By contrast, the race gap in depressive symptoms does seem to decline over time.

The model also allows us to test within-person change in depressive symptoms in late widowhood by including time-varying covariates. In the wave immediately following widowhood, depressive symptoms increase by 0.66 on average. However, these symptoms diminish as the duration of widowhood increases. Overall, the trajectories depicted in Figure 3 clearly reflect that the continuously married are advantaged across the board. At the other extreme is the early-widowhood group, with high levels of depressive symptoms at baseline that diminish only slightly over time. The late-widowhood group starts slightly above the continuously married, shows an abrupt increase in depressive symptoms following widowhood, but seems to regain its baseline level of psychological well-being within several years, well below that of the early-widowhood group. In addition, we tested whether the effects of widowhood on depression (both abrupt and long term) vary by gender (H2), but these were not significant (results not shown).

Discussion

Gender differences in depression following widowhood have long been debated in the literature, with some studies showing more adverse effects for men and others for women. Motivated by a life course perspective, we set out to examine whether these seemingly inconsistent results can be attributed to gender differences in the timing and duration of widowhood, rather than differences in the response to widowhood. We identify two competing mechanisms of selection into and out of widowhood that might explain previous discordant results. First, a duration effect, whereby men are selected out of widowhood through remarriage and mortality, leaving a higher proportion of newly widowed (and less adjusted) men in the sample. Because bereavement effects diminish over time but men spend less time widowed compared with women, a cross-section will overstate the widowhood effect for men. The second selection mechanism is a timing effect, whereby women are selected into *early* widowhood, which is then associated with worse psychological well-being compared with late widowhood. Failing to account for widowhood timing is likely to bias results from samples with a wide age range by confounding early and late widowhood. Such samples will overstate widowhood effects for women by including a greater share of early widows.

Using prospective panel data of older adults in the United States, followed for 14 years, our findings provide evidence for both types of selection effects: women are significantly more likely to be selected into early widowhood (and to a lesser degree, into late widowhood) and men are more likely to remarry following widowhood. Late widowers in the HRS cohort were also more likely than widows to die during the follow-up period, but there were no gender differences in mortality following early widowhood, as well as no differences in sample attrition.

Next, we set out to document detailed short- and long-term trajectories of depressive symptoms following widowhood. Whereas previous studies have been limited to small subsamples of widowed respondents, measured at two points in time (e.g., Chou & Chi, 2000; Lee & DeMaris, 2007), the present study spans eight waves of data, with a total of 929 respondents observed transitioning into widowhood over a 14-year period. The rich panel data allowed us to examine detailed person-specific trajectories of depressive symptoms surrounding the transition into widowhood and to compare these trajectories with those of two

counterfactuals: the early and continuously widowed and the continuously married.

We found no gender difference in depressive symptoms among the widowed in short- or long-term trajectories, net of widowhood duration and prewidowhood levels of depressive symptoms. In the short term, widowhood is associated with an increase in depressive symptoms that diminish over time—for both men and women. We further find that psychological adjustment is delayed when the deceased spouse's health status prior to death is better. We interpret this finding as suggestive of an anticipatory death effect, in accordance with previous studies on grief (Carr, 2012).

Consistent with previous studies (Hughes & Waite, 2009), our findings show that in the long term those who remain continuously married through late midlife are the most advantaged in terms of psychological well-being. By contrast, those who are widowed early and remain widowed exhibit the worst outcomes: they start with significantly higher levels of depressive symptoms that diminish only slightly over time. Interestingly, even at baseline (i.e., prewidowhood), individuals who later become widowed score higher on depressive symptoms compared with the continuously married. Prewidowhood differences between these groups may indicate the burden of dealing with a spouse's illness or a caregiving effect that takes place prior to widowhood.

Whereas depressive symptoms seem to diminish over time for the late-widowhood group, they remain high steadily for the early-widowhood group. This finding suggests that early and long-term widowhood has lasting implications for psychological well-being, spanning decades after spousal loss. This study is unable to ascertain which determinants underlie the marked differences between early and late widowhood. However, considering our other findings, we speculate that it may have to do, at least in part, with the effect of unanticipated loss.

Although the eight waves of panel data provided by the Health and Retirement Survey (HRS) offer new insights into gender and widowhood experiences, the data used in this study present some limitations. First, the HRS includes a single measure of depression—an abridged eight-item version of the CES-D scale. Although proven reliable compared with the 20-item scale (Turvey et al., 1999), it presents but one dimension of psychological adjustment to widowhood. Second, CES-D was not measured consistently in Wave 1, which compelled us to use the second HRS wave as our baseline assessment. Third, in the absence of direct measures of anticipatory loss, we relied on the deceased spouse's self-rated health in the survey interview prior to death. Admittedly, this is an indirect way of operationalizing anticipatory loss, but one that was imposed by data availability. We hope that future studies will be better equipped to address this issue directly.

In conclusion, this study joins previous longitudinal studies in questioning the finding that men are more vulnerable to widowhood than women, at least with respect to depressive symptoms (Chou & Chi, 2000; Lee & DeMaris, 2007). However, our results suggest an important caveat: the conclusion of no gender differences in psychological adjustment to widowhood is conditional on becoming widowed under similar circumstances. From a population perspective, widowhood is a gendered story. Whereas men and women do not differ in their reaction to widowhood, women are disadvantaged with respect to pathways to widowhood that lead to worse long-term outcomes. Taken together, our findings paint a clear picture: first, compared with men, women are more likely to become widowed at an earlier stage of the life course and to remain widowed for a longer period of time; second, early widowhood is associated with poor psychological well-being that does not seem to improve over time. In other words, the effects of early widowhood are substantial and chronic for those who remain widowed, whereas those widowed at later ages are more likely to recover, at least in terms of depression. Future research would do best to focus on gendered pathways to widowhood, rather than on gendered outcomes of widowhood.

Funding

This research was supported by grant, 5 R24 HD042849, Population Research Center, awarded to the Population Research Center at The University of Texas at Austin by the Eunice Kennedy Shriver National Institute of Child Health and Human Development and, in part, by grant, R01 AG026613, to Debra Umberson. The Health and Retirement Study is sponsored by the National Institute on Aging (NIA U01AG009740) and is conducted by the University of Michigan.

Acknowledgments

The authors would like to thank Robert Hummer, Rebecca Clark, and the special issue's editor, Gary Lee, for their insightful comments on previous versions of the article. I. Sasson was responsible for writing the manuscript, conducting statistical analyses, and jointly developing the article's theoretical framework and main arguments. D. J. Umberson contributed to the theoretical framework and literature review, developing key arguments, and revising the manuscript.

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