NIH Public Access
Author Manuscript
J Aging Health. Author manuscript; available in PMC 2011 June 1.

Published in final edited form as:
J Aging Health. 2011 June ; 23(4): 714–742. doi:10.1177/0898264310393339.

Socioeconomic Status, Marital Status Continuity and Change, Marital Conflict, and Mortality

Heejeong Choi, PhD and
Human Development and Family Studies, The Pennsylvania State University, Altoona

Nadine F. Marks, PhD
Human Development and Family Studies, University of Wisconsin-Madison

Abstract

Objectives—We investigated (1) whether being continuously married compared to other marital status trajectories over 5 years attenuates the adverse effects of lower education and lower income on longevity, (2) whether being in higher-conflict as well as lower-conflict marriage compared to being single provides a buffer against SES inequalities in mortality, and (3) whether the conditional effects of marital factors on the SES-mortality association vary by gender.

Method—We estimated logistic regression models with data from adults aged 30 or older who participated in the National Survey of Families and Households 1987–2002.

Results—Being continuously married, compared to being continuously never married or making a transition to separation/divorce, buffered mortality risks among men with low income. Mortality risk for low income men was also lower in higher-conflict marriages compared to being never married or previously married.

Discussion—Marriage ameliorates mortality risks for some low income men.

Keywords

socioeconomic status; income; marital status; marital quality; marital conflict; health mortality

Introduction

The lifelong processes of health differentials associated with social position and social relationships are considered pivotal to understanding successful adaptation in the middle and later years. Research has consistently established that persons of higher socioeconomic status (SES) live healthier and longer than individuals of lower SES (see House, 2001; Link & Phelan, 1995, for reviews). Scholarship has also confirmed that married individuals typically lead healthier and longer lives than their unmarried counterparts (see Ross, Mirowsky, & Goldsteen, 1990; Waite & Gallagher, 2000, for reviews); and that, among the married, good marital quality leads to better physical health (Choi & Marks, 2008; Umberson, Williams, Powers, Liu, & Needham, 2006). SES and social relationships pattern exposure to a broad range of health risk factors and access to health resources, thereby affecting the onset and progression of multiple health outcomes (e.g., Link & Phelan, 1995).

Heretofore, existing research has mostly documented the main effects of socioeconomic position and marital status on health, independent of each other. Nonetheless, recent conceptual models propose that health disparities across the SES continuum might be mediated or moderated by psychosocial factors such as existence or quality of marital relationships. Over 90% of U.S. adults marry at least once in their lifetimes, and the conjugal relationship is typically one of the most significant sources of social support and

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

social control during adulthood. Therefore, it is critical to understand how these two central developmental contexts—macro-societal (SES) and micro-psychosocial (marriage)—might interactively as well as independently shape physical health change over time.

Guided by bioecological systems theory and the general stress and health literature, we focus in this study on the potential for moderation of health risk due to lower SES (both education and income). We postulate potential interactive processes between SES and marriage, and test whether being married can help buffer SES inequalities in mortality experienced by midlife and older adults. Specifically, we evaluate evidence regarding the following research questions: first, whether the negative effects of lower education and lower income on longevity might be attenuated by being married, in contrast to being previously married or never married; second, taking into account variations in marital quality among the married, whether higher- conflict marriage as well as lower-conflict marriage might still attenuate SES differentials in mortality compared to remaining never married or previously married; and finally, whether the conditional effects of marital experience on the SES-mortality association might vary between men and women.

Theoretical Background

The health literature has suffered from a paucity of explicit theory guiding the examination of correlates and determinants of physical health. Epidemiologists have identified a long list of health risk factors such as lower SES, being single, smoking, excessive drinking, and lack of physical activity without necessarily postulating theoretical relationships among them (Susser & Susser, 1996). In this regard, bioecological systems theory (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) offers a unique perspective. It provides an overarching framework to disentangle health risk factors into proximal processes, person characteristics, context, and time. Further, the theory also highlights that distal social context such as the overarching social stratification system, as indicated through educational and income differences in a society, does not uniformly affect individuals. Rather, proximal processes such as marital relationship quality or person characteristics such as marital status and gender may condition the effects of more distal social context. In other words, distal social context and proximal inter- or intra-personal resources and vulnerabilities are *interactive or multiplicative* in shaping health outcomes.

The challenge facing health scholars working from an ecological perspective is that the theory does not necessarily lend itself to testable hypotheses with regard to the nature of the associations among health risk and protective factors (Grzywacz & Fuqua, 2000). However, guided by the general stress and health literature (e.g., Cohen & Syme, 1985), we posited that having a marital partner may alleviate the harmful effects of lower SES on longevity. Individuals located at the lower end of the education or income continuum are exposed to more global challenges (e.g., discrimination) than their higher status peers, and yet they typically have fewer psychosocial resources to cope with these challenges (e.g., Alder et al., 1994; House, 2001). Marital relationships may provide a buffer against the adverse effects of lower SES on length of life through providing health-enhancing social support, social control, and financial resources.

Literature Review

The Association between SES and Mortality

Scholars have examined SES differentials in health in relation to a wide variety of health outcomes (e.g., heart disease, cancer, obesity), with mortality being one of the most extensively studied health indicators. Lower education and lower income are robust predictors of early death and early onset of morbidity (e.g., House, 2001; Link & Phelan,

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

1995). Epidemiologists have proposed that difficulties associated with marginal status in society may compromise “bodily defenses” against or “host resistance” to a multitude of nonspecific diseases (Cassel, 1976; Syme & Berkman, 1976).

With regard to more specific processes that lead to premature health deterioration and death, persons with lower education may lack the ability to gather appropriate health information, pursue early detection of health problems, navigate complex health care systems, and adhere to a treatment regimen (Mirowsky & Ross, 2003). Insufficient income is associated with more exposure to environmental health risks (e.g., hazardous work environment, inadequate housing, unsafe neighborhood), unhealthy lifestyles (e.g., excessive drinking, lack of exercise, smoking), and lack of access to preventive and treatment health services (Rogers, Hummer, & Nam, 2000).

The Association between Marriage and Mortality

Being married is associated with higher chances of better health and survival, and this differential between married and unmarried most typically has been found to be greater for men compared to women (Gove, 1973; Hu & Goldman, 1990; Murphy, Grundy, & Kalogirou, 2007; although see also for findings of no gender differences, Lillard & Waite, 1995; Manzoli, Villari, Pirone, & Boccia, 2007; Pienta, Hayward, & Jenkins, 2000). Notably, some recent research highlights that marital histories may have potentially cumulative effects. Individuals in longer-term marriages with no or fewer number of marital disruptions show evidence of experiencing the greatest health advantages (e.g., Dupre & Meadows, 2007; Lillard & Waite, 1995). Findings on mortality differences among subgroups of never married and formerly married are somewhat inconsistent. Nevertheless, divorced individuals typically face the highest rates of premature mortality (Gove, 1973; Hu & Goldman, 1990; Manzoli et al., 2007). Recent evidence also suggests that mortality risks associated with unmarried statuses appear to be increasing over time (Hu & Goldman, 1990; Murphy et al., 2007).

Married persons enjoy a number of health benefits that singles may not have access to. Emotional support from a marital partner enhances overall physical and psychological well-being and buffers detrimental effects of either acute or chronic life stressors (Ross et al., 1990). Married persons also are connected to larger networks of both kin and nonkin ties, therefore less socially isolated than the non-married (McPherson, Smith-Lovin, & Brashears, 2006). Marriage also provides a structure and regularity to everyday life, where spouses monitor each other’s health (Umberson, 1987). Compared to singles, married persons accumulate more financial resources to afford a healthier life style and better health care (Ross et al., 1990).

Nonetheless, we question whether an unhappy marriage is still better for health and longevity than being single. Most of the studies documenting the deleterious effects of poor marital quality examine variations in health only among the married (Choi & Marks, 2008; Umberson et al., 2006). As a rare exception, Hawkins and Booth (2005) reported that married individuals who argue frequently with their spouses perceive greater declines in self-rated health in comparison to their divorced counterparts. Further, their results indicated that persons who stay divorced have better self-rated health than persons in long-term, low-quality marriages.

Marriage as a Moderator of the SES-Mortality Association

Smith and Waitzman (1994) provided one of the few studies specifically testing whether being married might provide a buffer against SES inequalities in longevity. Using data from the National Health and Nutrition Examination Survey I (1971–1975) and its follow-up

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

study (1982–1984), they reported that poverty heightened all-cause mortality, but its effects differed by marital status. Divorced and widowed men as well as never-married women were more vulnerable to the negative effects of poverty on longevity, compared to their married counterparts. Similarly, Hemstrom (1996) found that unskilled male workers and unemployed women (mostly housewives) had higher chances of dying when they were divorced compared to their married peers. Also consistent with the previous findings, Lorant and colleagues (2005) demonstrated that lower education had greater effects on suicide among unmarried persons (i.e., separated/divorced, widowed, never-married combined) in comparison to their married counterparts. Notably, findings from studies by Smith and Waitzman (1994) and Hemstrom (1996) strongly implied a potential 3-way interaction among SES, marital status, and gender. Yet, the Lorant et al. study (2005) was the only study that statistically evaluated such a 3-way interaction, and did not find gender differences in the conditional effects of marital status on the education-mortality linkage.

Causation or Selection?

Thusfar, we have reviewed research suggesting that lower SES and being single are causes of greater declines in health and mortality over time. However, evidence also exists that the other direction of causality might be at work. Poor health during childhood or adolescence can hinder an individual's educational attainment, which limits one's chances for attaining employment in jobs with higher professional prestige, power, and wealth (Haas, 2006). Poor health also prevents adults from earning higher incomes and accumulating wealth by limiting their chances of obtaining or maintaining paid work and by increasing medical bills. That is, illness and disability can place people on a trajectory of downward drift in SES (Smith, 1999). Paralleling the above argument, research has found that unhealthy individuals are less likely to be selected into marriage than healthy persons, because persons in poor health or with health risk factors such as unhealthy appearance (e.g., obesity) and behaviors (e.g., smoking) are less likely to attract potential partners or maintain them if in relationships (Goldman, 1993).

It is uncertain to what extent the associations between SES, marriage, and physical health are attributed to either causation or selection, and to what extent the selection has been confounded with the causation. In fact, there is a growing consensus among health scholars that causation and selection are not mutually exclusive processes: Illness and disability are both cause and effect of social inequalities (Haas, 2006). Poor health in childhood leads to lower educational attainment and less income, and lower SES in turn leads to poor health. Mindful of these reciprocal effects that unfold over time, we include baseline functional health status and its change over time as controls in our analyses.

Present Study

Our study aims to extend understanding of the protective effects of marriage on the SES-mortality association in multiple ways. First, we differentiate the transition effects of exiting into or out of marriage versus the potentially cumulative effects of remaining married or unmarried over time (Marks & Lambert, 1998). Marital dissolution typically entails loss of social support, negative health behaviors, and economic distress (Hemstrom, 1996). These may generate sharp increases in mortality or morbidity risks during the first few years into the transition, followed by a gradual decline in the hazards henceforward (Dupre & Meadows, 2007; Thierry, 2000). Second, we evaluate whether being in higher-conflict marriage as well as lower-conflict marriage may attenuate the inverse association between SES and mortality, in comparison to remaining formerly married or never married. Despite reports on the negative effects of high-conflict marriage on physical health (Choi & Marks, 2008; Umberson et al., 2006), differences in mortality between persons in a distressed marriage and the unmarried remain largely unexplored. Third, we systematically examine

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

gender differences in the moderating effects of marriage on the SES-mortality linkage. Men tend to receive broader-range and greater health benefits from marriage through the emotional support and social control their wives provide (Ross et al., 1990; Waite & Gallagher, 2000). Women, on the other hand, derive most of the health benefits from financial resources their husbands contribute to the marital relationship (Lillard & Waite, 1995). When marriage dissolves, some studies have found men to be more vulnerable to negative health consequences compared to women (Dupre & Meadows, 2007; Thierry, 2000). Yet, other studies have found no such differences (Lillard & Waite, 1995; Manzoli et al., 2007; Pienta et al., 2000). With regard to the effect of marital quality on health among married individuals, recent population studies tend to report no gender differences (Umberson et al., 2006).

In sum, previous research has given only limited consideration to marital status and marital quality as potential moderating factors in the SES-mortality association among middle and later life adults. To address this limitation, we explore two main research questions and two auxiliary questions:

Research Question 1a—Does being continuously married (in contrast to being continuously separated/divorced, continuously widowed, continuously never-married, experiencing a transition from marriage to separation/divorce, experiencing a transition from being married to widowed, or experiencing a transition to becoming married) over a period of five years attenuate the negative effects of lower education and lower income on survival over the next ten years?

Research Question 1b—Do any moderating effects of marital status continuity and change vary by gender?

Research Question 2a—Does being in a consistently higher-conflict marriage as well as being in a consistently lower-conflict marriage over a period of five years attenuate the negative effects of lower education and lower income on survival, when contrasted to being continuously single (formerly or never married) over the same period of time?

Research Question 2b—Do any moderating effects of marital conflict/marital status vary by gender?

Method

Data and Sample

The data for this study came from three waves of the National Survey of Families and Households (NSFH), which include data from a multistage area probability sample of the United States. At Time 1 (T1; 1987–1988), 13,007 noninstitutionalized American adults aged 19 and older were recruited and interviewed in person. The data consisted of a main sample of 9,637 respondents and an additional oversample of African-Americans, Mexican-Americans, Puerto Ricans, single parents, stepparents, cohabitors, and recently married persons. A substantial amount of information on spouse and focal minor child 19 years or younger (if available) was collected in addition to information about the main respondents. At Time 2 (T2; 1992–1994), 10,005 of the original respondents from the first wave completed a second round of face-to-face interviews. At Time 3 (T3; 2001–2002), only a subset of T1 respondents was asked to participate in the study: Individuals who did not have a focal child at T3 but who were 45 or older at T3; or individuals who had an eligible focal child at T3. Out of 8,990 individuals who met the sample selection criteria, 4,596

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

respondents completed the telephone survey at T3. The overall response rate was 59%. (See Time 3 field report at http://www.ssc.wisc.edu/nsfh/codedata3.htm.)

The analytic sample for *Research Question 1* included: (1) persons aged 45 or older at T3 (thus aged 30 or older at T1) who were either successfully traced at T3 or verified to have deceased between T2 and T3; and (2) individuals who reported their marital status at T1 and T2. The selection criteria for the analytic sample used for *Research Question 2* included, in addition to the two sample selection criteria described above, (3) individuals who did not experience any marital transition between T1 and T2. Note that the analytic sample for Research Question 1 remained nationally representative, because a subset of T1 respondents who were under 45 at T3 and had a focal child was excluded. Although it is not representative of the entire population, the analytic sample for Research Question 2 is a random sample from this select population of people who remained married, previously married, or never-married over 5 years.

Examination of analytic variables revealed that 30% of 13,007 NSFH T1 respondents were missing on *household income* (a focal variable in our study) due to missing an answer on some part of the complex questions asked to ascertain this total. Given the importance of handling missing cases well to obtain unbiased parameter estimates and standard errors (Allison, 2002), we created 10 imputed data sets with the Markov chain Monte Carlo (MCMC) algorithm for all analyses. We imputed a select set of variables with more than 5% missing cases: specifically, income at T1, marital disagreement at T1 and T2, and functional limitations at T1 and T2. Descriptive statistics for all analytic variables are provided in Table 1.

Measures

Mortality was ascertained by using available data based on location efforts for T2 and T3 of the NSFH. The mortality outcome variable was coded 1 if respondents were determined to have died between T2 and T3 and 0 if they were alive at T3. Respondents who were not located at T3 and thus whose mortality could not be identified were excluded from analyses. The NSFH was not linked to the National Death Index; therefore, readers are cautioned that the number of deaths was likely to be underreported.

Education was measured as years of education completed by respondents at T1. Because analytic samples used in this study consisted of persons aged 30 and older at T1, they experienced minimal change in educational attainment after the first wave of the survey. Therefore, the effects of change in education on mortality were not considered in analyses.

Household income was assessed at each wave by combining reports of all types of earned and unearned income by full-time and part-time household members. To reflect income relative to needs, we divided household income by the number of all household members. The log of income (household income divided by the number of all household members + 2,000) was used to adjust for skew in the distribution (i.e., clustering toward lower incomes). Further, as a control for the potential effect of change in the adjusted income between T1 and T2 on mortality between T2 and T3, a measure of income change was created by subtracting T1 logged household income from T2 logged household income.

Marital status continuity and change was coded using information on current marital status and complete marital histories available at T1 and T2. With this information, respondents were grouped into one of 8 categories: (1) continuously married between T1 and T2 (reference group), (2) continuously separated/divorced, (3) continuously widowed, (4) continuously never married, (5) transitioned from married to separated/divorced between T1 and T2, (6) transitioned from married to widowed between T1 and T2, (7) transitioned from

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

being single (i.e., separated/divorced, widowed, or never married) to being married (i.e., first married or remarried) between T1 and T2, and (8) made two or more marital transitions (e.g., married to divorced to remarried, never married to married to divorced) between T1 and T2.

Marital conflict was assessed with a 6-item marital disagreement index similar to indices used in previous national studies (e.g., Johnson, White, Edwards, & Booth, 1986). At both T1 and T2, respondents were asked to rate the frequency of their marital disagreement with the following questions: "How often, if at all, in the past year have you had open disagreements about each of the following: (a) household tasks, (b) money, (c) spending time together, (d) sex, (e) in-laws, (f) the children?" The response range was: 1 = *never*, 2 = *less than once a month*, 3 = several times a month, 4 = about once a week, 5 = several times a week, 6 = almost everyday. The average score across the answered items became the index score for this variable.

To group individuals who reported relatively consistent levels of marital conflict at both waves to examine Research Question 2, we first determined the amount of change that could be considered large enough to denote significant shift in marital quality over 5 years. We began by computing change scores by subtracting T1 from T2 mean marital disagreement scores. The distribution of the change scores revealed that about 90% of the respondents experienced no more than a one-point shift in either direction on the marital disagreement scale (the standard deviation for the distribution was .75). Therefore, we determined that more than one-point shift in mean scores could be considered significant change. Among the respondents who reported more than a one-point shift in marital discord, persons who experienced increase in marital conflict were classified into the *increased marital conflict* category. Individuals who indicated decrease in marital disagreement were grouped into the *decreased marital conflict category*. Although it is substantively important to examine how rise and fall in marital conflict might condition SES differentials in health, we remind readers that these change groups were not the focus of our research due to their small sample sizes.

Among the married who experienced one-point-or-less shifts in marital disagreement, individuals who scored less than 2 on the marital disagreement scale at T1 were grouped into *the consistently lower marital conflict category*, whereas persons who scored 2 or more at T1 on the marital disagreement scale were grouped into *the consistently higher marital conflict category*. Arguing with a spouse less than once a month might not appear to qualify for "higher marital disagreement". However, the score of 2 is a mean of 6 variables, which means respondents would need to be reporting an argument less than once a month about 6 domains of marriage. Or, they might argue every day about one domain, for example, and less about others. Further, the marital disagreement scores have a highly skewed distribution with a mean of 1.72 and a standard deviation of .67 at T1, with about 70% of respondents scoring less than 2 on the marital disagreement scale at T1 and T2. Therefore, we determined that 2 might be considered an empirically defensible cut point to use to categorize people who experienced *relatively higher* marital disagreement. Hawkins and Booth (2005) made essentially the same argument in their study for the manner in which they defined long-term low-quality marriage. *Singles* (i.e., continuously separated/divorced, continuously widowed, or continuously never married between T1 and T2) were used as the contrast group in analyses for Research Question 2.

Control variables—Key demographic variables that have been found to be associated with SES, marriage, and mortality were controlled in all analyses. These included age at T1 (in years), gender (0 = *male*, 1 = *female*), race/ethnicity (dichotomously coded 0 = *non-Hispanic White*, 1 = *non-White*), parental status (i.e., child aged 19 or under in the household

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

at T1 and T2 [reference category], no minor child in the household at T1 and T2, minor child in the household only at T1, minor child in the household only at T2), employment status (i.e., employed at T1 and T2 [reference category], no employment at T1 and T2, employed only at T1, employed only at T2), and cohabitation status at T1 and T2 (0 = *no cohabitation*, 1 = *cohabitation*). (Note: It might have been optimal to include cohabitation status in our marital trajectory measures, but further differentiating by cohabitation status led to many groups with too few cases to credibly analyze.) To reduce the extent to which health and marriage selection influence our findings, we included as a control number of functional limitations at T1. Respondents indicated, with *yes* (1) or *no* (0), if they had a physical or mental condition that limited their ability to: (a) care for personal needs such as dressing, eating, or going to the bathroom, (b) move about inside the house, (c) work for pay, (d) do day-to-day household tasks, and (e) walk six blocks. We also included change in the number of functional limitations between T1 and T2 by subtracting the T1 score from the T2 score.

Analytic Sequence

Logistic regression models were estimated to examine the effects of SES, marriage, and gender on mortality over 10 years (T2 to T3). Model 1 regressed mortality on T1 education, T1 income, marital variables, and control variables to estimate the main effects of SES and marriage on mortality. Although our research interest here focused on investigating the interactive effects of SES and marriage, we provided results for main effects for interested readers. Model 2 and Model 3 estimated additional two-way interaction effects between SES and marriage-related variables to evaluate whether being continuously married or being in consistently higher- or lower-conflict marriage might mitigate the negative effects of lower education and lower income on survival. Model 4 and Model 5 estimated additional three-way interaction effects between SES, marriage-related variables, and gender to evaluate whether potential moderation by marriage-related variables on mortality risks of lower SES might vary by gender.

Results

SES, Marital Status Continuity and Change, and Mortality

Table 2 presents odds ratios for the effects of SES, marital status, and gender on mortality from T2 to T3. No significant two-way interactions between SES (education or income) and marital status continuity and change were observed in Models 2 and 3, and no significant three-way interactions between education, marital status, and gender were observed in Model 4. Nonetheless, Model 5 revealed two significant three-way interaction effects on mortality among income, marital status, and gender.

Specifically, Figure 1 illustrates that the protective effect of being married, compared to being never married is very evident for men with low income. This is demonstrated by a sizable difference in level of predicted mortality probability illustrated by 1st and 3rd bars, representing never-married men located at one standard deviation below as well as one standard deviation above the mean of the income distribution. For men who remained continuously married to the same person for at least 5 years, little gap appears to exist in probabilities of dying over the next 10 years whether they have relatively low income or relatively high income (see 2nd and 4th bars). By contrast, for women, the same difference in marital status did not appear to moderate the income-mortality association. In other words, income and marital status both appear to influence mortality risks, relatively independent from each other.

Figure 2 depicts the pattern of results for the three-way interaction between income, transition to separation/divorce (versus continuously married), and gender. Consistent with

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

what was illustrated in Figure 1, having a marital partner, compared to transitioning into separation/divorce, greatly ameliorated the higher mortality risks experienced by lower income men. Low income men suffered much higher mortality than did high income men when they made the transition to separation/divorce; whereas the level of probabilities of dying appeared similar among low income married men and high income married men. By contrast, and contrary to what might be typically expected, at lower levels of income, women who transitioned to separation/divorce fared better than women who remained married.

SES, Marital Conflict/Marital Status, and Mortality

Table 3 presents odds ratios for the effects of SES, being in either consistently higher- or lower-conflict marriage in contrast to being continuously single (i.e., continuously separated/divorced, widowed, and never-married combined), and gender on mortality. No significant two-way interactions were observed in Models 2 and 3. Further, no statistically significant three-way interaction effects on survival were found between education, marital conflict/marital status, and gender (Model 4). However, one significant three-way interaction in Model 5 revealed that the moderating effect of marital conflict/marital status on the income-mortality association varied between men and women.

Figure 3 illustrates that lower income is associated with a much higher probability of dying than higher income among continuously single men as well as women (either previously married or never married). Notably, among lower income men, even a higher-conflict marriage benefited their survival in contrast to not being married; in fact, men with low income appeared to gain more advantage from even a lower-quality marriage (in contrast to remaining single) than men with high income. By contrast, among low income women, a higher-conflict marriage (versus being single) did not attenuate mortality risks.

Discussion

This study examined how marital experiences might condition the effects of education and income stratification on individual mortality among midlife and older adults. The inverse association of SES with mortality has been consistently documented for men and women across time and place. Guided by bioecological systems theory and the general stress and health literature, we evaluated whether marriage-related factors might attenuate the adverse effects of lower education and lower income on longevity. In considering marriage as a moderating factor for the SES-mortality association, we extended the previous research by (1) examining marital status continuity and change rather than one-time marital status, (2) considering marital quality in addition to marital status, and (3) statistically evaluating gender differences.

Results of this study provide some support for the idea that health is a product of interactions between macro- and micro-level determinants of health over time as might be expected from bioecological systems theory (Bronfenbrenner & Morris, 1998). Using a nationally representative sample of adults aged 30 or older studied across 15 years, we found evidence that being married can mitigate mortality risks posed by income inequalities for men. More specifically, men with low income who were continuously married over five years had a lower probability of dying compared to their male low income peers who were either never married or transitioned out of marriage to separation or divorce during the same time period. In fact, marriage narrowed mortality gaps between low income men and high income men to such an extent that income differentials in mortality no longer appear prominent among married men.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Divorce has already been documented to heighten mortality risks for men of lower SES (Hemstrom, 1996; Smith & Waitzman, 1994). Our study qualifies this finding: We did not find interactive effects by income or education for the *continuously* divorced or separated group, suggesting that the interactive effect between income and marital breakup on men's chances of survival might be limited temporally to the first few years into separation or divorce. Our results also contribute new evidence that never married men are also more vulnerable to the adverse effects of lower income on longevity.

Our study also provides an answer to the question: "Is a low-quality (i.e., high conflict) marriage, compared to remaining single (previously married or never married), still beneficial for buffering the problematic effects of lower SES on longevity?" Our findings suggest that the answer is yes, but only for men. Our results lead us to speculate that social control may have greater effects on longevity than affective quality of the marital relationship for low income men. Yet, we caution readers that all-cause mortality, as a health indicator, is only one indicator of quality of life. Staying in a high-disagreement marriage (in contrast to divorce) may elevate low income men's chances of survival, but they may still be psychologically and physically more impaired than their counterparts who leave distressed marital relationships (Hawkins & Booth, 2006).

We found no significant interactive effects of education and marriage on mortality and we speculate that our particular outcome measure—mortality—may be responsible for this result. The direct effect of education on mortality appears to be somewhat limited, largely mediated through income (Feinglass et al., 2007). Further, health scholarship has begun to indicate that education might be more predictive of the onset of functional health problems, whereas income might be more predictive of health change including mortality (Herd, Goesling, & House, 2007; Zimmer & House, 2003).

With regard to gender differences, our results suggest that while there is some evidence for marriage buffering the negative impact of low income on survival for men, health advantages of marriage may not hold for all. It is noteworthy that low income women who transitioned to separation/divorce experienced better chances for survival compared to their married counterparts (Figure 2) and low income women in a high-conflict marriage did not evidence lower odds of dying over ten years than their single low income women peers (Figure 3). Our finding may be sensible if we accept the evidence that women receive their greatest health benefits of marriage through the financial resources their husbands provide (Lillard & Waite, 1995) and keep in mind that we included measures of income and income change in all our models. A marital situation that is low on financial resources may not be particularly protective of women's health. The literature on divorce also points to a gender difference in the timing of mourning over the loss of a marital relationship. The process tends to begin earlier for women than men, and therefore their highest levels of stress may occur prior to separation or divorce (e.g., Bloom & Caldwell, 1981). Many of the low income women who transitioned to separation/divorce in our study may have actually been relieved by the ending of their stressed marriages (Wheaton, 1990), and thereby were more enabled to experience better chances of survival than might have been expected.

We note that the protective effects of marriage for low income men did not emerge consistently across all contrasts. We suspect that this inconsistency might be due to the limitations of our marital status continuity and change measures. Marital status change between T2 and T3 could not be taken into account in our analyses because no information on marital status was obtained from respondents who died between T2 and T3. Further, our 10-year follow-up period between T2 and T3 might have lowered the chance of detecting the buffering effects of marriage. Meinow and colleagues (Meinow, Kåreholt, Parker, & Thorslund, 2004) noted that, in mortality analyses, unidentified changes in predictor

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

variables attenuate the strength of their associations with the dependent variable, and the size of the attenuation becomes larger as the duration of a follow-up period becomes longer. Another limitation of our analyses is that we did not take marital duration fully into account. It is possible that even more complete trajectories of duration might help disclose additional protective effects of marriage (Dupre & Meadows, 2007; Lillard & Waite, 1995).

We note also that limitations such as reverse causality and sample attrition may have introduced potential sources of bias in our study. We adjusted for baseline functional health and its change over 5 years in our analysis models to reduce the extent to which selection might have driven or biased our results. We also estimated potential sample attrition bias, finding that men, non-White, people with lower SES, and cohabitors were more likely to leave the survey through total non-response at subsequent waves (i.e., T2 and T3). In addition, T1 respondents who were older, unemployed, and had no minor child at home (compared to having at least one minor child in the household) were more likely to have become non-respondents at T2. Likewise, continuous unemployment at T1 and T2 predicted total non-response at T3. However, parents who continued to have no minor child at T1 and T2 (compared to parents who had at least one minor child in the household at both waves) were in fact more likely to have stayed in the NSFH at T3. Individuals who reported increases in functional limitations, separation/divorce between T1 and T2 also were more likely to have become non-respondents at T3. Marital conflict, on the other hand, did not predict NSFH non-response at T2 or T3. Because sample attrition during follow-up periods was not random, it may have introduced bias in our findings.

Despite limitations, findings of this study provide evidence that some income disparities in health might be buffered by marriage among men. As Link and Phelan (1995) argue, SES and social support are fundamental causes of health differentials that largely determine exposure to a broad range of health risk factors and access to resources for maintaining and promoting health, regardless of what health outcomes are concerned. As one of the most crucial sources of social support, being married could attenuate the deadly consequences of “making less than others.” Future efforts to reduce income differentials in health might benefit by targeting never-married men and recently separated/divorced men with limited economic resources.

Acknowledgments

This work was supported by the National Institute on Aging (AG206983).

References

Adler NE, Boyce WT, Chesney MA, Cohen S, Folkman S, Kahn RL, Syme SL. Socioeconomic status and health: The challenge of the gradient. American Psychologist. 1994; 49:15–24. [PubMed: 8122813]

Allison, PD. Missing data. Thousand Oaks, CA: Sage; 2002.

Bloom BL, Caldwell RA. Sex differences in adjustment during the process of marital separation. Journal of Marriage and the Family. 1981; 43:693–701.

Bronfenbrenner, U. The ecology of human development. Cambridge, MA: Harvard University Press; 1979.

Bronfenbrenner, U.; Morris, P. The ecology of developmental processes. In: Damon, W.; Lerner, RM., editors. Handbook of child psychology: Vol. 1. Theoretical models of human development. 5. New York: Wiley; 1998. p. 993-1028.

Cassel J. The contribution of the social environment to host resistance. American Journal of Epidemiology. 1976; 104:107–123. [PubMed: 782233]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Choi H, Marks NF. Marital conflict, depressive symptoms, and functional impairment. Journal of Marriage and Family. 2008; 70:377–390. [PubMed: 18698378]

Cohen, S.; Syme, SL., editors. Social support and health. Orlando, FL: Academic Press; 1985.

Dupre ME, Meadows SO. Disaggregating the effects of marital trajectories on health. Journal of Family Issues. 2007; 28:623–652.

Feinglass J, Lin S, Thompson J, Sudano J, Dunlop D, Song J, Baker DW. Baseline health, socioeconomic status, and 10-year mortality among older middle-aged Americans: Findings from the Health and Retirement Study, 1992–2002. Journal of Gerontology: Social Sciences. 2007; 62B:S209–217.

Goldman N. Marriage selection and mortality patterns: Inferences and fallacies. Demography. 1993; 30:189–208. [PubMed: 8500636]

Gove WR. Sex, marital status, and mortality. American Journal of Sociology. 1973; 79:45–67.

Grzywacz JG, Fuqua J. The social ecology of health: Leverage points and linkages. Behavioral Medicine. 2000; 26:101–115. [PubMed: 11209591]

Haas SA. Health selection and the process of social stratification: The effect of childhood health on socioeconomic attainment. Journal of Health and Social Behavior. 2006; 47:339–354. [PubMed: 17240924]

Hawkins DN, Booth A. Unhappily ever after: Effects of long-term, low-quality marriages on well-being. Social Forces. 2005; 84:445–465.

Herd P, Goesling B, House JS. Socioeconomic position and health: The differential effects of education versus income on the onset versus progression of health problems. Journal of Health and Social Behavior. 2007; 48:223–238. [PubMed: 17982865]

Hemstrom O. Is marriage dissolution linked to differences in mortality risks for men and women? Journal of Marriage and the Family. 1996; 58:366–378.

House JS. Understanding social factors and inequalities in health: 20th century progress and 21st century prospects. Journal of Health and Social Behavior. 2001; 43:125–142. [PubMed: 12096695]

Hu Y, Goldman N. Mortality differentials by marital status: An international comparison. Demography. 1990; 27:233–250. [PubMed: 2332088]

Johnson DR, White LK, Edwards JN, Booth A. Dimensions of Marital Quality: Towards methodological and conceptual refinement. Journal of Family Issues. 1986; 7:31–49.

Lillard LA, Waite LJ. 'Til death do us part: Marital disruption and mortality. American Journal of Sociology. 1995; 100:1131–1156.

Link BG, Phelan J. Social conditions as fundamental causes of disease. Journal of Health and Social Behavior. 1995:35. 80–94. (Extra issue: Forty years of medical sociology: The state of the art and directions for the future).

Lorant V, Kunst AE, Huisman M, Bopp M, Mackenbach J. the EU Working Group. A European comparative study of marital status and socio-economic inequalities in suicide. Social Science & Medicine. 2005; 60:2431–2441. [PubMed: 15814169]

Manzoli L, Villari P, Pirone GM, Boccia A. Marital status and mortality in the elderly: A systemic review and meta-analysis. Social Science & Medicine. 2007; 64:77–94. [PubMed: 17011690]

Marks NF, Lambert JD. Marital status continuity and change among young and midlife adults: Longitudinal effects on psychological well-being. Journal of Family Issues. 1998; 19:652–686.

McPherson M, Smith-Lovin L, Brashears ME. Social isolation in America: Changing in core discussion networks over two decades. American Sociological Review. 2006; 71:353–375.

Meinow B, Kåreholt I, Parker MG, Thorslund M. The effect of the duration of follow-up in mortality analysis: The temporal pattern of different predictors. Journal of Gerontology: Social Sciences. 2004; 59B:S181–S189.

Mirowsky, J.; Ross, CE. Education, social status, and health. New York: Aldine de Gruyter; 2003.

Murphy M, Grundy E, Kalogirou S. The increase in marital status differences in mortality up to the oldest age in seven European countries, 1990–99. Population Studies. 2007; 61:287–298. [PubMed: 17979003]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Pienta AM, Hayward MD, Jenkins KR. High consequences of marriage and retirement years. Journal of Family Issues. 2000; 21:559–586.

Rogers, RG.; Hummer, RA.; Nam, CB. Living and dying in the USA: Behavioral, health, and social differentials of adult mortality. San Diego, CA: Academic Press; 2000.

Ross CE, Mirowsky J, Goldsteen K. The impact of the family on health: The decade in review. Journal of Marriage and the Family. 1990; 52:1059–1078.

Smith JP. Healthy bodies and thick wallets: The dual relation between health and economic status. Journal of Economic Perspectives. 1999; 13:145–166.

Smith KR, Waitzman NJ. Double Jeopardy: Interaction effects of marital and poverty status on the risk of mortality. Demography. 1994; 31:487–507. [PubMed: 7828768]

Susser M, Susser E. Choosing a future for epidemiology: I. Eras and paradigms. American Journal of Public Health. 1996; 86:668–673. [PubMed: 8629717]

Syme SL, Berkman LF. Social class, susceptibility, and sickness. American Journal of Epidemiology. 1976; 104:1–9. [PubMed: 779462]

Thierry X. Risks of mortality and excess mortality during the first ten years of widowhood. Population: An English Selection. 2000; 12:81–109.

Umberson D. Family status and health behaviors: Social control as a dimension of social integration. Journal of Health and Social Behavior. 1987; 28:306–319. [PubMed: 3680922]

Umberson D, Williams K, Powers DA, Liu H, Needham B. You make me sick: Marital quality and health over the life course. Journal of Health and Social Behavior. 2006; 47:1–16. [PubMed: 16583772]

Waite, L.; Gallagher, M. The case for marriage: Why married people are happier, healthier, and better off financially. New York: Broadway Books; 2000.

Wheaton B. Life transitions, role histories, and mental health. American Sociological Review. 1990; 55:209–223.

Zimmer Z, House JS. Education, income, and functional limitation transitions among American adults: Contrasting onset and progression. International Journal of Epidemiology. 2003; 32:1089–1098. [PubMed: 14681281]

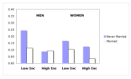

Figure 1.
Predicted Mortality Probability of Men and Women by Levels of Income and Marital Status Continuity and Change
Note: Inc = Income. Low/High Income = 1 standard deviation below/above the mean of the logged income distribution.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

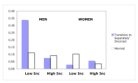

Figure 2.
Predicted Mortality Probability of Men and Women by Levels of Income and Marital Status Continuity and Change
Note: Inc = Income. Low/High Income = 1 standard deviation below/above the mean of the logged income distribution.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

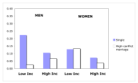

Figure 3.
Predicted Mortality Probability of Men and Women by Levels of Income and Marital Conflict/Marital Status
Note: Inc = Income. Low/High Income = 1 standard deviation below/above the mean of the logged income distribution.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Table 1

Descriptive Statistics for Analytic Variables

	RQ 1 (N = 5,937)	RQ 2 (N = 5,026)	
	Mean (S.D.)	*Mean (S.D.)*	*RANGE*
Mortality T2–T3	0.15 (0.36)	0.16 (0.37)	0.00 – 1.00
Functional health			
Baseline functional limitations	0.27 (0.84)	0.27 (0.84)	$-3.43 - 7.25^a$
Change in functional limitations T2-T1	0.54 (1.29)	0.57 (1.30)	$-5.00 - 7.37$
Demographic controls			
Age at T1	49.48 (14.01)	50.08 (14.05)	30.00 – 95.00
Female (coded 1)	0.62 (0.49)	0.62 (0.49)	0.00 – 1.00
Non-White (coded 1)	0.21 (0.41)	0.21 (0.41)	0.00 – 1.00
Parental status			
Minor child at T1 and T2	0.28 (0.45)	0.28 (0.45)	0.00 – 1.00
No minor child at T1 and T2	0.55 (0.50)	0.56 (0.50)	0.00 – 1.00
Minor child only at T1	0.15 (0.36)	0.14 (0.34)	0.00 – 1.00
Minor child only at T2	0.02 (0.15)	0.02 (0.14)	0.00 – 1.00
Work status			
Employed at T1 and T2	0.52 (0.50)	0.51 (0.50)	0.00 – 1.00
No employment at T1 and T2	0.31 (0.46)	0.32 (0.47)	0.00 – 1.00
Employed only at T1	0.12 (0.33)	0.12 (0.33)	0.00 – 1.00
Employed only at T2	0.06 (0.23)	0.06 (0.23)	0.00 – 1.00
Cohabitation at T1 (coded 1)	0.03 (0.17)	0.02 (0.13)	0.00 – 1.00
Cohabitation at T2 (coded 1)	0.03 (0.16)	0.03 (0.16)	0.00 – 1.00
Socioeconomic status			
Education at T1 (in years)	12.67 (3.27)	12.62 (3.29)	0.00 – 20.00
Logged income at T1	9.46 (0.76)	9.46 (0.75)	6.29 – 12.67
Change in logged income T2-T1	0.18 (0.76)	0.18 (0.73)	$-4.56 - 5.39$
Marital status continuity and change T1–T2			
Continuously married	0.53 (0.50)		0.00 – 1.00
Continuously separated/divorced	0.14 (0.35)		0.00 – 1.00
Continuously widowed	0.12 (0.32)		0.00 – 1.00
Never married	0.06 (0.24)		0.00 – 1.00
Married to separated/divorced	0.04 (0.19)		0.00 – 1.00
Married to widowed	0.03 (0.18)		0.00 – 1.00
Never/previously married to married	0.06 (0.24)		0.00 – 1.00
Two$^+$ times of marital status transition	0.02 (0.15)		
Marital conflict/marital status T1–T2			
Continuously single of all types		0.38 (0.48)	0.00 – 1.00
Consistently higher marital conflict		0.14 (0.35)	0.00 – 1.00
Consistently lower marital conflict		0.40 (0.49)	0.00 – 1.00
Increased marital conflict		0.05 (0.22)	0.00 – 1.00

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

	RQ 1 (N = 5,937)	RQ 2 (N = 5,026)	
	Mean (S.D.)	*Mean (S.D.)*	*RANGE*
Decreased marital conflict		0.03 (0.16)	0.00 – 1.00

Notes: Data source is the National Survey of Families and Households (1987–2002). RQ 1 = Research Question 1, RQ2 = Research Question 2. T1 = Time 1, T2 = Time 2, T3 = Time 3. For parental status, minor child was defined as a child under age 19 in the household. For work status, employment was defined as part-time or full-time paid employment. Means for dichotomous variables are proportions. Descriptive statistics are averages from 10 imputed datasets.

[a]Some imputed values were located outside the expected range of 0 to 5 (Allison, 2002).

NIH-PA Author Manuscript NIH-PA Author Manuscript NIH-PA Author Manuscript

Table 2

Odds Ratios for the Effects of SES, Marital Status Continuity and Change T1–T2, and Gender on Mortality

	Model 1	Model 2	Model 3	Model 4	Model 5
Functional Health					
Baseline functional limitations	1.38 ***	1.38 ***	1.39 ***	1.38 ***	1.38 ***
Change in functional limitations T2-T1	1.27 ***	1.26 ***	1.26 ***	1.27 ***	1.26 ***
Demographic controls					
Age at T1	1.09 ***	1.09 ***	1.09 ***	1.09 ***	1.09 ***
Female (coded 1)	0.50 ***	0.51 ***	0.50 ***	0.51 ***	0.55 ***
Non-White (coded 1)	1.12	1.10	1.10	1.12	1.12
Parental status					
Minor child at T1 and T2 (reference)	1.00	1.00	1.00	1.00	1.00
No minor child at T1 and T2	0.90	0.88	0.89	0.93	0.94
Minor child only at T1	1.07	1.07	1.08	1.08	1.06
Minor child only at T2	0.32	0.33	0.33	0.34	0.35
Work status					
Employed at T1 and T2 (reference)	1.00	1.00	1.00	1.00	1.00
No employment at T1 and T2	1.58 ***	1.57 ***	1.55 **	1.55 **	1,54 **
Employed only at T1	1.41 *	1.40 *	1.37 *	1.39 *	1.38 *
Employed only atT2	1.47	1.46	1.45	1.44	1.40
Cohabitation at T1 (coded 1)	1.19	1.16	1.15	1.17	1.16
Cohabitation at T2 (coded 1)	1.13	1.14	1.16	1.14	1.15
Socioeconomic status (SES)					
Education at T1 (in years)	0.99	0.96	0.99	0.99	0.99
Logged income at T1	0.82 *	0.82 *	0.82 *	0.74 **	0.99
Change in logged income T2-T1	0.80 ***	0.81 ***	0.80 ***	0.81 **	0.81 **
Marital status continuity and change T1–T2					
Continuously married (reference)	1.00	1.00	1.00	1.00	1.00
Continuously separated/divorced	1.83 ***	1.89 ***	2.08 ***	1.81 ***	1.98 **
Continuously widowed	1.62 ***	1.81 ***	1.98 *	1.68 ***	2.00 **

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

	Model 1	Model 2	Model 3	Model 4	Model 5
Never married	2.10 ***	2.20 ***	1.57	2.09 ***	1.60
Married to separated/divorced	1.33	1.32	1.70	1.21	1.47
Married to widowed	1.55 *	1.68	3.02 **	1.61 *	2.57 *
Never/previously married to married	0.83	0.75	0.84	0.82	0.81
Two+ times of marital status transition	0.88	0.92	0.34	0.80	0.39
SES × gender					
Education × female			0.91 *		
Income × female					0.51 ***
SES × marital status continuity and change T1–T2					
Education × continuously separated/divorced		1.03	1.02		
Education × continuously widowed		1.07	0.98		
Education × never married		1.07	1.05		
Education × married to separated/divorced		1.00	0.91		
Education × married to widowed		1.07	1.12		
Education × never/previously married to married		0.92	0.90		
Education × two+ times of marital status transition		1.14	1.40		
Income × continuously separated/divorced				1.07	1.01
Income × continuously widowed				1.33	0.91
Income × never married				1.07	0.46
Income × married to separated/divorced				0.76	0.34
Income × married to widowed				1.35	1.36
Income × never/previously married to married				1.37	1.33
Income × two+ times of marital status transition				0.69	1.15
Marital status continuity and change T1–T2 × gender					
Continuously separated/divorced × female			0.88		0.76
Continuously widowed × female			0.92		0.79
Never married × female			1.79		1.63
Married to separated/divorced × female			0.46		0.47
Married to widowed × female			0.49		0.53
Never/previously married to married × female			0.83		0.67

J Aging Health. Author manuscript; available in PMC 2011 June 1.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

	Model 1	Model 2	Model 3	Model 4	Model 5
Two+ times of marital status transition × female			4.43		3.12
SES × marital status continuity and change T1–T2 × gender					
Education × continuously separated/divorced × female			1.07		
Education × continuously widowed × female			1.17		
Education × never married × female			1.09		
Education × married to separated/divorced × female			1.38		
Education × married to widowed × female			1.00		
Education × never/previously married to married × female			1.09		
Education × two+ times of marital status transition × female			0.68		
Income × continuously separated/divorced × female					1.25
Income × continuously widowed × female					2.20
Income × never married × female					4.55 *
Income × married to separated/divorced × female					7.81 *
Income × married to widowed × female					1.35
Income × never/previously married to married × female					0.77
Income × two+ times of marital status transition × female					0.99
−2 Log likelihood	3582.02	3573.83	3551.08	3574.03	3535.91
df	23	30	45	30	45

Notes: Data source is the National Survey of Families and Households 1987–2002 (N = 5,937; Men = 2,265, Women = 3,672).

* p ≤ .05

** p ≤ . 01

*** p ≤ .001. Two-tailed test. For parental status, minor child was defined as a child under age 19 in the household. For work status, employment was defined as part-time or full-time paid employment.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

Table 3

Odds Ratios for the Effects of SES, Marital Conflict/Marital Status, and Gender on Mortality

	Model 1	Model 2	Model 3	Model 4	Model 5
Functional health					
Baseline functional limitations	1.41 ***	1.42 ***	1.42 ***	1.42 ***	1.43 ***
Change in functional limitations T2-T1	1.27 ***	1.27 ***	1.27 ***	1.27 ***	1.27 ***
Demographic controls					
Age at T1	1.08 ***	1.08 ***	1.08 ***	1.08 ***	1.08 ***
Female (coded 1)	0.52 ***	0.52 ***	0.38	0.53 ***	0 49 ***
Non-White (coded 1)	1.09	1.09	1.09	1.09	1.10
Parental status					
Minor child at T1 and T2 (reference)	1.00	1.00	1.00	1.00	1.00
No minor child at T1 and T2	1.01	0.97	0.97	1.02	1.01
Minor child only at T1	1.21	1.19	1.20	1.22	1.21
Minor child only at T2	0.23	0.23	0.23	0.23	0.21
Work status					
Employed at T1 and T2 (reference)	1.00	1.00	1.00	1.00	1.00
No employment at T1 and T2	1.52 **	1.53 **	1.51 **	1.52 **	1.52 **
Employed only at T1	1.37	1.38 *	1.39 *	1.38 *	1.37
Employed only at T2	1.40	1.39	1.38	1.40	1.34
Cohabitation at T1 (coded 1)	1.62	1.62	1.60	1.63	1.60
Cohabitation at T2 (coded 1)	0.71	0.69	0.69	0.71	0.71
Socioeconomic status (SES)					
Education at T1 (in years)	0.99	1.02	1.01	0.99	0.99
Logged income at T1	0.83 *	0.83 *	0.83 *	0.89	0.85
Change in logged income T2-T1	0.81 **	0.81 **	0.81 **	0.81 **	0.81 **
Marital conflict/marital status T1–T2					
Continuously single of all types (reference)	1.00	1.00	1.00	1.00	1.00
Consistently higher marital conflict	0.50 **	0.47 ***	0.44 **	0.49 **	0.42 **
Consistently lower marital conflict	0.57 ***	0.54 ***	0.51 ***	0.57 ***	0.52 ***

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

	Model 1	Model 2	Model 3	Model 4	Model 5
Increased marital conflict	0.69	0.61	0.71	0.68	0.73
Decreased marital conflict	0.52	0.47	0.36	0.48	0.39
SES × gender					
Education × female			1.02		
Income × female					1.06
SES × marital conflict/marital status T1–T2					
Education × consistently higher marital conflict		0.91	0.99		
Education × consistently lower marital conflict		0.95	0.99		
Education × increased marital conflict		0.92	0.99		
Education × decreased marital conflict		0.90	0.86		
Income × consistently higher marital conflict				1.01	1.94
Income × consistently lower marital conflict				0.83	1.12
Income × increased marital conflict				0.93	1.19
Income × decreased marital conflict				0.53	0.61
Marital conflict/marital status T1–T2 × gender					
Consistently higher marital conflict × female			1.03		1.20
Consistently lower marital conflict × female			1.05		1.14
Increased marital conflict × female			0.46		0.66
Decreased marital conflict × female			1.67		1.46
SES × marital conflict/marital status T1–T2 × gender					
Education × consistently higher marital conflict × female			0.79		
Education × consistently lower marital conflict × female			0.90		
Education × increased marital conflict × female			0.75		
Education × decreased marital conflict × female			1.15		
Income × consistently higher marital conflict × female					0.25 *
Income × consistently lower marital conflict × female					0.51
Income × increased marital conflict × female					0.50
Income × decreased marital conflict × female					0.48
−2 Log likelihood	3132.84	3126.87	3107.10	3130.43	3103.05
df	20	24	33	24	33

Notes: Data source is the National Survey of Families and Households 1987–2002 (N = 5,026; Men = 1,902, Women = 3,124).

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$. Two-tailed test. For parental status, minor child was defined as a child under age 19 in the household. For work status, employment was defined as part-time or full-time paid employment.