Marital Dissolution and Self-Rated Health: Life Course and Birth Cohort Patterns

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Abstract

I work from a life course perspective to explore the potentially changing relationship between marital dissolution and health over the life course and across birth cohorts. Growth curve analysis of a fifteen-year national longitudinal survey suggests that transitions from marriage to divorce and widowhood have adverse effects on self-rated health, although those who are continuously divorced and widowed exhibit health trajectories that are similar to those who remain continuously married. More importantly, I find that the health penalty of transitions to divorce and widowhood is more pronounced later in the life course for earlier birth cohorts; while this penalty is more pronounced earlier in the life course for more recent birth cohorts. These results may reflect birth cohort differences in the process of aging and/or in the experience of marital dissolution.

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The association between marriage and health is one of the most robust relationships in social science (Ross, Mirowsky and Goldsteen 1990; Waite 1995; Waite and Gallagher 2000). Recent studies working from a life course perspective, with an emphasis on changes in social context, reveal that the consequences of marital dissolution may be more important than marriage per se in considering health consequences (Williams and Umberson 2004). Marital dissolution through either divorce or widowhood may lead to change in an individual's social environment which may, in turn, have a detrimental effect on health. Past research also suggests that the health impact of marital dissolution may depend on the age at which marital dissolution occurs (Williams and Umberson 2004). However, empirical evidence on life course variation in the effect of marital dissolution on health is limited and inconsistent (e.g., Gove 1973; Williams and Umberson 2004). Moreover, most previous studies on life course patterns in the association of marital status and marital transitions with health do not consider the potential role of birth cohort in life course patterns. Certainly, the meanings and prevalence of marital dissolution vary across birth cohorts and over individuals' life course. The present study emphasizes the important role of shifting historical contexts across birth cohorts in studying the effects of marital dissolution on health over the life course.

Based on data from a fifteen year longitudinal survey of a nationally representative sample of Americans, I employ growth curve techniques to address the following research questions: (1) Does the relationship between marital dissolution and self-rated physical health vary with age? (2) Do life course patterns in the relationship between marital dissolution and physical health vary across birth cohorts? and (3) What factors (i.e., psychological distress,

smoking and access to a confidant) help to explain life course and birth cohort patterns in the effects of marital dissolution on health?

BACKGROUND

Sociologists have long argued that marriage is associated with enhanced health while divorce and widowhood lead to a decline in both physical and mental health (Waite 1995). The negative health consequences of marital dissolution from either divorce or widowhood include increased level of depression (Williams 2003), decline in self-rated health (Williams and Umberson 2004), increased chances for chronic health problems (Hughes and Waite 2009) and higher mortality risk (Lillard and Waite 1995). Past research focuses on identifying key reasons for the association of marital status and marital transitions with health, as well as social group (such as gender and race) variation in these associations (Ross et al. 1990).

In recent years, more and more studies have used a life course perspective to guide analyses of health disparities (Lynch 2003). The life course perspective elaborates on the importance of time, context and processes of human development (Elder, Johnson, and Crosnoe 2003). As an important feature of adult life course, marital dissolution can shape individuals' social environment (usually in a negative way) which, in turn, may affect individuals' health (Williams and Umberson 2004). A life course approach suggests that the ways marital dissolution influences health depend on individuals' social context, associated with a particular life course position—which is often indexed by age. Certainly, it is an undeniable social and biological fact that health status is highly age dependent. We also expect that the experience of marital dissolution, a key feature of one's social context, varies with advancing age (U.S. Census Bureau 1999).

Recent studies reveal that the effects of marital dissolution on health may change over the life course but empirical evidence is limited and inconsistent. For example, Williams and Umberson (2004) find that the detrimental effect of divorce on self-rated health occurs for older men but not for younger men. The negative effect of widowhood on self-rated health has also been shown to increase with age (Durden 2005). Additionally, marital quality seems to be more salient for self-rated health with advancing age (Umberson et al. 2006). Taken together, these studies then suggest that various aspects of marital experiences have stronger effects on health at older ages.

In contrast, other studies, mostly on mortality, suggest that the effect of marital status on health/mortality would decrease as individuals age. Gove (1973) finds that mortality difference between the married and unmarried including the widowed, divorced and never married is smaller at older ages (Gove 1973). A more recent study on widowhood suggests that the widowhood penalty on mortality is larger for younger than older widowers (Mineau, Smith, and Bean 2002). Certainly, different results on life course patterns in the effects of marital experiences may be due to different health outcomes examined (e.g., self-rated health, mortality). Nevertheless, past research on life course patterns in the association of marital experiences with health and mortality are limited in important ways.

First, to my knowledge, no previous studies on life course variation in the association of marriage with health have considered the role of birth cohort. Birth cohort is important for studying life course patterns in the link between marriage and health, as age, the most frequently utilized life course indicator, is interwoven with birth cohort, especially in cross-sectional data. Without controlling for birth cohort, estimating the age effect as a life course indicator is inherently biased. For example, assume that the association of divorce and health is weaker in

more recent birth cohorts than in earlier birth cohorts but the relationship is stable over individuals' entire life course. Because more recent birth cohorts are younger than earlier birth cohorts, examination of the age effect without controlling for birth cohort would suggest that the effect of divorce on health increases over the life course. In his examination of age and birth cohort patterns in the relationship between education and health, Lynch (2003) contends that "from a modeling standpoint, ignoring life-course or cohort patterns amounts to model misspecification error, the consequences of which include biased estimation of the relationship ……" (Lynch 2003: 314). Distinguishing age and birth cohort effects is not possible with cross-sectional data collected in a particular time point as age and cohort effects measure the same temporal origin. With longitudinal data, age and birth cohort effects can be estimated simultaneously and we can investigate the age effect within a specific birth cohort as well as across birth cohorts (Lynch 2003). In addition to methodological concerns, considering birth cohort is theoretically important as life course patterns in the effect of marital dissolution on health may not be uniform across birth cohorts, as I shall discuss later.

The second limitation of previous studies is that the failure to consider mortality selection may lead to biased estimation in the relationship between marital dissolution and health over the life course. Mortality selection may affect estimation of the association of marriage with health because mortality selection processes are not evenly distributed across marital status groups and this becomes more relevant with advancing age. In comparison to the married, the divorced/widowed face higher risk of death (Waite 1995) and this process of selection through mortality would thus leave the divorced/widowed a more robust subpopulation at older ages, making the health difference between the married and divorced/widowed appear to diminish over the life course (see Lynch 2003).

Third, past studies on temporal changes in the relationship between marital dissolution and health are mainly based on either cross-sectional data or longitudinal data with only two time points with a focus on absolute levels of change (Williams and Umberson 2004). These studies are unable to demonstrate baseline differences in health status in addition to the rate of change over time. The present study addresses the aforementioned limitations by utilizing growth curve techniques to estimate how marital dissolution shapes health trajectories over fifteen years of the life course and across fifty nine years of birth cohort (from 1903 to 1961) with mortality selection taken into account.

Marital Dissolution and Health: Life Course and Birth Cohort Variation

A substantial literature establishes an empirical relationship between marital dissolution and health and focuses on identifying and understanding key reasons for this association (Waite and Gallagher 2000). Although some studies emphasize the possibility of selection effects, suggesting that individuals in poorer health or with less favorable health characteristics are more likely to experience marital dissolution (Joung et al. 1998), most researchers emphasize one of two models to explain why marital dissolution may undermine health: the "marital resource" model and the "stress" model. They provide a foundation for predicting the specific direction of change in marital dissolution and health that one might expect to see over the life course as well as across birth cohorts.

The "Marital Resource" Model

According to the "marital resource" model, marital dissolution may negatively affect an individual's mental and physical health outcomes because it is related to loss of social, psychological and economic resources presumably provided by marriage, which in turn undermine physical health and longevity (Ross et al. 1990). The divorced or widowed usually

have fewer economic resources than the married due to lack of specialization, economies of scale, and the pooling of wealth (Becker 1991), which may in turn prohibit the purchase of medical care or other health enhancing resources (Ross et al. 1990). Additionally, the divorced or widowed are more likely to engage in risky health behaviors such as smoking due to absence of control from a spouse (Umberson 1987). In this view, the status of being divorced and widowed would thus have a long-term detrimental effect on individuals' health as long as they do not remarry.

A growing number of studies suggest that health differences by marital status may become more salient with advancing age as advantage or disadvantage associated with certain marital statuses have cumulative effects on health (Dannefer 2003). This argument can be derived from the original work of Robert Merton (1968), who views social stratification as "the accumulation of differential advantages for certain segments of the population, differentials that are not bound up with demonstrated differences in capacity" (Merton 1942: 273). The "cumulative-advantage/disadvantage" argument then suggests that the protective "resources" provided by marriage and the negative consequences of continuously lacking such resources may take a toll on health with advancing age. For example, some detrimental effects of marital dissolution, such as increased risk of *smoking,* may require a longer duration to eventually produce negative health outcomes at advanced ages. This argument may be more relevant for earlier birth cohorts since smoking prevalence has declined among more recent birth cohorts as a consequence of anti-smoking education and public policy programs (CDC 2004).

In contrast to the "cumulative-advantage/disadvantage" hypothesis, some scholars contend that the age effect on health becomes much stronger at older ages, and it would dominate the effects of other social factors, including marital status, at the later life course

(House et al. 1994). This view, often termed the "age-as-leveler" hypothesis then suggests that divorce and widowhood would be more predictive of health at younger than older ages.

The "Stress" Model

Recent studies working from a life course perspective emphasize the important role of the marital dissolution *process* (rather than the *status* of being divorced or widowed) in affecting heath trajectories (Williams and Umberson 2004). This line of research contends that marital dissolution leads to a temporal decline in health due to increased stress (Williams and Umberson 2004). This "stress" model (also referred to as the "crisis" model) emphasizes that the process of marital dissolution is stressful and may lead to "transitory" changes in social contexts in ways that hurt health.

Each individual has his/her different experience in surviving a marital dissolution. Research suggests that the health consequence of a life event depends on the social context within which the event occurs (Wheaton 1990). Certainly, age is an important feature defining individual context and this may shape how one experiences marital dissolution (Williams and Umberson 2004). Some researchers point to age as an indicator of increasing psychological "maturity" and accumulation of experience and skills (Mirowsky and Ross 1992). According to this "age-as-maturity" perspective, older individuals may have more coping skills to deal with the stress of marital dissolution, and thus be more protected from the adverse consequences of marital dissolution on health. In this view, the effects of marital dissolution on health would decrease as an individual ages.

Older cohorts came of age in an era when being married is the only true path to maturity and fulfillment, and divorce has become more prevalent for more recent birth cohorts (Norton and Moorman 1987). More recent birth cohorts are also more likely to utilize divorce and

bereavement counseling and to become involved in new intimate relationships (including cohabitation and same-sex unions) than earlier birth cohorts (Manting 1996). All of these factors may promote adaptation and resilience following marital dissolutions in younger birth cohorts as they age. In this sense, the "age-as-maturity" hypothesis would appear to be more relevant for younger birth cohorts than for older birth cohorts.

On the other hand, there are reasons to expect intensified effects of marital dissolution on health at older ages. For example, some studies suggest that older individuals are more vulnerable to life trauma as human immune functioning declines with age (Uchino, Kiecolt-Glaser, and Glaser 2000). Frailty related to the aging process may exacerbate negative effects of life traumas (such as marital dissolution) on health (Ensel and Lin 2000). Additionally, the process of marital dissolution may carry more *stress* at older ages as social networks and contact with friends tend to decrease with advancing age (Turner and Marino 1994), and loss of a spouse as a *confidant* may be more stressful at older ages. In this sense, we may expect that detrimental effects of transitions to divorce/widowhood on health are stronger at older ages. Moreover, as divorce and separation have become more prevalent and normative, marital dissolution may impose less stress (Thornton 1989) and take less of a toll on health for more recent birth cohorts.

Taken together, the "marital resource" model suggests that the status of being continuously divorced or widowed is detrimental to health; while the "stress" model posits that the process of transition to divorce or widowhood (rather than marital status, per se) may lead to a temporary decline in health. The arguments of cumulative-advantage/disadvantage together with increased frailty at older ages suggest that the effect of marital dissolution (either the status or process) on health are stronger at older ages, and this life course pattern would be more pronounced for older than younger birth cohorts. In contrast, the age-as-maturity and age-as-

leveler arguments suggest that the effects of marital dissolutions (either the status or process) on health are weaker at older ages, and this life course pattern would be more pronounced for younger than older birth cohorts.

DATA, MEASURES AND STATISTICAL METHODS

Data and Sample

Data are from Americans' Changing Lives (ACL) national longitudinal survey covering a fifteen year period. ACL surveys were conducted by the Institute for Social Research between 1986 and 2001 (House 2002). Four waves of data were collected spanning the fifteen year period. The original sample was obtained in 1986 using multistage stratified area probability sampling with an oversample of African Americans and older individuals. Face-to-face interviews lasting about ninety minutes were conducted in 1986 (N=3,617), 1989 (N=2,867) and 1994 (N=2,398), with a phone interview in 2001 (N=1,787). The present analysis is restricted to 1,282 respondents who were either continuously married/divorced/widowed over the entire study period or who transitioned from married to divorced or widowed between survey waves. Respondents whose marital status and transitions were untraceable across the four waves of ACL data are excluded from the analysis in order to identify martial transitions.

Measures

Self-rated health. The primary outcome variable of this study is self-rated health. It is measured from the survey question "How would you rate your health at the present time?" Response options include "Excellent", "Very good", "Good", "Fair", and "Poor". It is scored 1 to 5 with higher values indicating better health. One missing case (among the total analyzed sample, N=1,282) on self-rated health at wave 4 is replaced with sample mean value of wave 4.

The reliability and validity of the self-rated health measure is well-established (Idler and Benyamini 1997).

Marital dissolutions. Two subsamples are drawn to better analyze the effects of being continuously divorced/widowed and transitions to divorce/widowhood on health trajectories respectively. In the analyses of continuously divorced/widowed, I compare the continuously (over the entire study period) divorced/separated (n=130) and widowed (n=138) to those who were continuously married (the reference group, n=719) over the whole study period. In the analyses of the transition to divorce or widowhood, I compare those who transition from married to divorced/separated (T1-T2 n= 38; T2-T3 n=50; T3-T4 n=56) or to widowed (T1-T2 n= 32; T2-T3 n= 43; T3-T4 n=107) to those who remain continuously married (the reference group) over the fifteen study period. Later transitions to remarriage (T2-T3 n=53; T3-T4 n=41) are also controlled in the analyses of transitions to divorce and widowhood.

Age and birth cohort. Age is measured in years and centered at 50. In the total sample analyzed (n=1,282), the age range is from 25 to 83 with the mean of 49 in the baseline survey year. The analyzed sample covers fifty nine years of birth cohort information from 1903 to 1961. Cohorts were arranged into seven groups by birth decade: 1900s (prior to 1909, n=25), 1910s (1910-1919, n=157), 1920s (1920-1929, n=322), 1930s (1930-1939, n=183), 1940s (1940-1949, n=257), 1950s (1950-1959, n=305), and 1960s (1960 and after, n=33). Cohort is treated as a continuous variable and centered at the 1930s birth cohort in the analyses. Different definitions of birth cohort (e.g., one-year or five-year delineation) revealed similar results.

Mortality selection. Mortality selection is important for life course studies on health disparities as death is not randomly distributed in the population and selectivity is greater for some groups with advancing age, and this may result in biased estimation of group differences in

health over the life course (Lynch 2003). A two-stage Heckman approach is used to control for mortality selection in this study (Heckman 1979). I first estimate a Cox hazards model for mortality on the entire ACL sample (i.e., all respondents in the baseline survey) over the fifteen-year interval as a function of a number of variables shown to be associated with mortality risk in previous studies (number of children, religion, insurance coverage, smoking, depression, age, gender, education, income, marital status—all measures were assessed at wave 1) (Rogers, Nam, and Hummer 2000). Then I include the predicted death hazard from the Cox model as a control variable in the subsequent models on the analyzed sample in the present study. Following this correction, estimates on self-rated health should be interpreted as adjusted for the unobserved variables that may affect self-rated health and tendency for death.

Socio-demographic covariates. All models in this study control for basic socio-demographic covariates including gender (1=male, 0=female), race (1=black, 0=non-black), education (years completed, measured at wave 1) and household income (in $1000, measured as a time varying covariate). Household income is converted into 1986 U.S. dollars using the consumer price index as a standard in order to adjust for inflation across years and it is then centered at the median value of the specific survey wave. Table 1 shows weighted descriptive statistics for the major variables in the two subsamples for analyzing continuous divorce/widowhood and transitions to divorce and widowhood.

Table 1 about here

Explanatory mechanisms. To help explain the life course and birth cohort patterns in the effects of marital dissolutions on health trajectories, I explore three potential mechanisms, suggested by the "marital resource" and "stress" models: smoking, access to any confidant, and psychological distress. *Smoking* is measured as whether or not respondents currently smoke

(1=yes). *Confidant* is measured from the question asking whether or not respondents have any persons with whom they can share their most private thoughts and feelings (1=yes). *Psychological distress* is measured by the 11-item version of the Center for Epidemiologic Studies Depression Scale (CES-D), with higher values indicating more distress. Respondents were asked how often they experienced each of the following feelings during the previous week: "I felt depressed," "I felt lonely," "people were unfriendly," "I enjoyed life," "I did not feel like eating, my appetite was poor," "I felt sad," "I felt that people disliked me," "I could not get going," "I felt that everything I did was an effort," "my sleep was restless," and "I was happy." Response options for each question were "hardly ever," "some of the time," and "most of the time."

Statistical Methods

To take advantage of four waves of longitudinal data, I use growth curve modeling techniques (i.e., mixed effects models) to estimate how marital dissolution may shape or disrupt self-rated health trajectories across age and birth cohorts. Growth curve techniques allow us to take into account that individuals start the study period with different levels of health status, and that each individual may experience different rates of change in health status over the life course as a function of marital dissolution. One of the major advantages of growth curve modeling in comparison to traditional regression modeling is its ability to distinguish the two levels (i.e., *within*- and *between*-individual) of heterogeneity in estimating health trajectories shaped by marital dissolution. The growth curve model accounts for systematic variation in growth parameters (i.e., latent intercept and age slope) of health trajectories attributable to marital dissolution and other covariates controlled in the model. Age is used as the major analysis time metric in the growth curve analyses. The focus of inference for linear growth curve models in

this study is on estimating the effects of marital dissolution (modeled as time varying covariates) on the self-rated health trajectories across age. The structural parameters of the model provide the basis for assessing those effects. The linear growth curve model employed in this study can be specified as:

$$Y_{ij} = \alpha_i + \beta_i Age_{ij} + \sum_{k<j} \gamma_{kj} M_{kij} + \sum_{k<j} \lambda_{kj} M_{kij} Age_{ij-1} + \sum_{k<j} \tau_{kj} M_{kij} Cohort_i + \sum_{k<j} \eta_{kj} M_{kij} Age_{ij-1} Cohort_i + cIncome_{ij} + \varepsilon_{ij}$$

$$\alpha_i = a_0 + a_1 Cohort_i + \mathrm{X}_0' \mathrm{B}_0 + \xi_{0i}$$

$$\beta_i = b_0 + b_1 Cohort_i + \mathrm{X}_0' \mathrm{B}_1 + \xi_{1i}$$

where Y_{ij} represents the outcome variable, (i.e., self-rated health of individual *i* at *j*th wave), where *j*=1,2, 3 or 4 indexing ACL waves 1-4 respectively. Age_{ij} is the age of individual *i* at *j*th wave. M_{kij} denotes marital dissolutions occurring between ACL waves, with *k*=1, 2 or 3 indexing transitions between waves 1-2, waves 2-3 and waves 3-4, respectively. Interaction terms of marital dissolutions by age and/or by birth cohort are included in level one of the model to allow for the effects of marital dissolution to vary across age and birth cohort. Note, when modeling age interaction relationships, age is measured at the prior survey wave to predict self-rated health at the current wave in order to indicate when respondents are exposed to the risk of marital dissolution. $Income_{ij}$ indicating household income of individual *i* at *j*th wave is also included as a time varying covariate in level one of the model. All other time-invariant covariates are added in the second level of the model, including birth cohort and other socio-demographic variables indexed by X_0' and X_1'. For the analyses of continuously divorced/widowed, M_{kij} is set to zero and variables for continuously divorced/widowed are included in X_0' and X_1'. α_i and β_i are the *i*th individual's latent intercept and age slope (random coefficients). γ_{kj} is the effect of marital dissolution *k* at *j*th wave, which is estimated as a fix effect and does not vary across individuals. λ_{kj}, τ_{kj} and η_{kj} are the coefficients (fixed effects) for interactions of marital dissolution with birth cohort and/or age. B_0 and B_1 are population-average (i.e., fixed) effects of X_0' and X_1' and *c* is the

fixed effect of income. ε_{ij}, ζ_{0i} and ζ_{1i} are residuals terms. All models are estimated using STATA XTMIXED (STATACorp LP, 2007).

RESULTS

Results from unconditional growth curve models with no covariates (not shown in tables) indicate that self-rated health declines with advancing age (*b=-.016; p<.001*) and increases across birth cohorts (*b=.117; p<.001*) for the 1,282 individuals included in the analyses. I also find evidence of significant variation in the random intercept (sd(α)= .673, *p<.001*) and random age slope (sd(β)= .010, *p<.001*) from the unconditional model (i.e., model with no controls for covariates), suggesting significant between-individual differences in growth trajectories of self-rated health across age.

Being Continuously Divorced/Widowed and Self-rated Health Trajectories

I first estimate the effects of being continuously divorced/widowed on trajectories of self-rated health across age and birth cohort. Table 2 shows the results from growth curve models for predicting baseline levels (the latent intercept) and rates of change across age (the latent age slope) in self-rated health and variation across marital status groups and birth cohorts. The mean of the latent intercept indicates the average level of self-rated health at age 50 for the continuously married in the model; and the mean of latent age slope describes the average changing rate of self-rated health trajectories across age for the continuously married. The coefficients for "Continuously divorced" and "Continuously widowed" quantify the differences in the self-rated health trajectories between the continuously divorced/widowed and the married.

Table 2 about here

Two models are presented in Table 2. Model 1 estimates the general effects of being continuously divorced/widowed on the latent intercept and age slope of health trajectories

without considering birth cohort variation. To understand whether there is birth cohort variation in the effects of being continuously divorced/widowed on health trajectories, I added interaction terms for birth cohort by marital status in Model 2 of Table 2 to predict the latent intercept and age slope for health trajectories. These results suggest that the continuously divorced/widowed follow health trajectories over the life course that are similar to those of the continuously married; and there is no significant birth cohort variation in these patterns.

Transitions to Divorce/Widowhood and Self-rated Health Trajectories

Now, I consider the general pattern in the effects of transitions to divorce and widowhood on self-rated health trajectories without considering potential age or birth cohort variation. Table 3 presents results from growth curve models for self-rated health trajectories varying by transitions from marriage to divorce and widowhood. Remarriage is controlled in all models in the analyses of transitions to divorce or widowhood. The lower half of Table 3 shows the effects of socio-demographic variables on the latent intercept and age slope of health trajectories. The mean of the latent intercept indicates the average level of self-rated health at age 50 for the continuously married; and the mean of latent age slope describes the average changing rate of self-rated health trajectories across age for the continuously married. The upper half of Table 3 presents the time-varying effects of transitions to divorce and widowhood on self-rated health at a specific time; and these coefficients are of most interest because they quantify the difference in self-rated health trajectories between those who transition to divorce/widowhood and those who remain continuously married.

Table 3 about here

Results in Table 3 reveal significant effects of the transition to divorce and to widowhood on self-rated health trajectories. These results suggest that those who transition from marriage to

divorce between waves 1 and 2 would have a worse self-rated health at wave 3 than those who remain continuously married due to their more rapid health decline by wave 3. However, self-rated health of those who transition to divorce between waves 1 and 2 rebounds up over time so that their health no longer differs significantly from that of the continuously married at wave 4. This suggests a short-term decline in self-rated health following divorce. The significant effect of the transition to widowhood on health trajectories revealed in Table 2 suggests that those who transition from marriage to widowhood between waves 1 and 2 would not experience significant health decline at wave 2 or 3 but health decline is apparent by wave 4.

Age and Birth Cohort Variation

Now, I turn to the question whether the effects of transitions out of marriage on self-rated health trajectories vary by age and birth cohorts. Results are shown in Table 4. Again, the lower half of Table 4 shows the effects of socio-demographic variables on the latent intercept and age slope of self-rated health trajectories. The upper half of Table 4 presents the time-varying effects (both main effects and age/birth cohort interaction effects) of transitions to divorce and widowhood on self-rated health at a specific time, which indicates the degree to which marital dissolutions are associated with a change in self-rated health with advancing age.

Table 4 about here

Two models are presented in Table 4. Model 1 of Table 4 examines the general life course pattern in the effects of transitions to divorce and widowhood on self-rated health trajectories without considering birth cohort variation. The reference group for Model 1 of Table 4 is individuals aged 50 at a specific time point who remain continuously married throughout the entire study period. The main effects of transitions to divorce and widowhood quantify the differences in self-rated health at a specific time between those who transition to

divorce/widowhood and those who remain continuously married. These main effects refer to the reference age group—individuals aged 50 in the prior survey. For example, the coefficient of -0.265 ($p>0.05$) for "Married to divorced W3-W4" on self-rated health at wave 4 suggests that, in comparison to the continuously married, the self-rated health of those who divorce at age 50 (i.e., the reference age at wave 3) would decrease an additional 0.265 units by age 57 (i.e., age which they turn at wave 4), although this result does not attain statistical significance.

The interaction terms of transitions to divorce/widowhood by age indicate how ages at which transitions occur may modify self-rated health trajectories. Results in Model 1 of Table 4 reveal significant age interaction effects of the transition to divorce W2-W3 and W3-W4 on self-rated health at wave 4. These results suggest that the transition to divorce may slow down health decline (or even lead to health improvement) at younger ages (less than 50) while it may foster health decline at older ages (above 50) in comparison to the continuously married. The negative effect of transition to divorce becomes stronger at advanced age. These results are consistent with a recent study by Williams and Umberson (2004) assuming there is no birth cohort variation in those patterns. However, life course pattern in the effects of transitions to divorce or widowhood may not be uniform across birth cohorts, as I will describe below.

To understand whether the life course pattern in the effects of transitions to divorce and widowhood on self-rated health trajectories vary across birth cohorts, I add three-way interaction terms in Model 2 of Table 4 to predict self-rated health at later waves. Results from Model 2 of Table 4 reveal significant three-way interaction effects of transitions to both divorce and widowhood by age and by birth cohort. These results suggest that the life course pattern in the effects of transitions to divorce and widowhood differ across birth cohorts. Specifically, transitions to divorce and widowhood would have more negative effects on self-rated health in

the later life course for earlier birth cohort (before the 1930s); while it would have more negative effects on self-rated health in the earlier life course for more recent birth cohorts (after the 1930s).

For greater clarification, results from the significant three-way interaction effects are graphically illustrated in Figure 1 for the transition to divorce and in Figure 2 for the transition to widowhood. Two example birth cohorts (i.e., 1910s and 1950s) at four life course stages (ages 26-41, 36-51, 66-81 and 76-91) with each one representing a fifteen-year study window are illustrated for the graphic purpose. Due to concerns about prediction beyond the data observation period (i.e., 1986-2001 for ACL), discussion of age and birth cohort patterns is restricted to the 1910s birth cohort at ages 66-81 and 76-91 (i.e., Panels a3-a4 in Figures 1 and 2) and the 1950s birth cohort at ages 26-41 and 36-51 (i.e., Panels b1-b2 in Figures 1 and 2).

Figure 1 shows the predicted self-rated health trajectories (based on Model 2 of Table 4) of those who transition to divorce and of those who remain continuously married. The four graphs in the first row of Figure 1 (a1-a4) show the effects of the transition to divorce at ages 34-41, 44-51, 74-81 and 84-91 for the 1910s birth cohort. For example, Figure 1-a3 displays the predicted self-rated health trajectories of the 1910s birth cohort from age 66 to 81 for those who remain continuously married and those who transition from married to divorced between ages 74-81. These results for the 1910s cohort suggest that those who are continuously married between ages 66 and 81 would experience a steady health decline with advancing age; and the transition from marriage to divorce between ages 74-81 would lead to a more rapid decline in self-rated health by age 81. The negative effect of the transition to divorce on self-rated health is more pronounced when the transition to divorce occurs between ages 84-91 for the 1910s cohort, as shown in Figure 1-a4.

Figure 1 about here

The second row of Figure 1 (b1-b4) shows the predicted self-rated health trajectories varying by transitions from marriage to divorce at ages 34-41, 44-51, 74-81 and 84-91 for the 1950s birth cohorts and reveals a different life course pattern from the 1910s birth cohort. From Figure 1-b1 and 1-b2, we can see that for the1950s birth cohort, those who transition to divorce at ages 34-41 would experience a more rapid decline in self-rated health in comparison to those who remain continuously married; and the negative effect of the transition to divorce on health trajectories tends to diminish with advancing age (as shown in Figure 1-b2).

Figure 2 about here

Results on the transition to widowhood from Model 2 of Table 4 are illustrated in Figure 2. Again, eight graphs are presented in Figure 2 to represent the effects of transitions to widowhood at four different life course positions (i.e., between ages 26-29, 36-39, 66-69 and 76-79) for two birth cohorts (e.g., 1910s and 1950s); and I focus on Panels a3-a4 and b1-b2 in Figure 2 due to concerns about prediction beyond data collection period. These results suggest that for the 1910s birth cohort, the transition to widowhood between ages 66-69 (shown in Figure 2-a3) would lead to a more rapid decline in self-rated health in comparison to those who remain continuously married; and this effect increases as the transition to widowhood occurs at older ages (shown in Figure 2-a4). In contrast, the graphs in the second row of Figure 2 indicate that for the 1950s birth cohort, the negative effect of transition to widowhood on self-rated health trajectories is larger at earlier ages (i.e., ages 26-29, shown in Figure 2-b1) than older ages (i.e., ages 36-39, shown in Figure 2-b2).

Explanatory Mechanisms

Now, I attempt to explain the life course and birth cohort patterns in the effects of transitions to divorce and widowhood on health trajectories discussed above. Three potential

mechanisms, suggested in previous literature, are considered: psychological distress, having a confidant, and smoking. In order for a potential mechanism variable to qualify as a mediating factor for the life course and birth cohort patterns in the health consequence of marital dissolution, three criteria must be satisfied. First, the transition to divorce or widowhood should have a significant effect on the mechanism variable; second, the mechanism variable should be a significant predictor of health trajectories, controlling for the transition to divorce and widowhood; and third, the significance level or magnitude of the life course and birth cohort patterns should be reduced after the mechanism variables are added into the model.

I find that the transition to divorce (W3-W4) is associated with decreased probability of having a confidant, increased probability of smoking and psychological distress at a later time; and the transition to widowhood (W1-W2) is associated with decreased probability of having a confidant and increased psychological distress at later times. I add those identified potential mechanism variables into the model to predict health trajectories (not shown in the paper but available from the author upon request), and only psychological distress is significantly associated with self-rated health. Although adding psychological distress in the model results in little change in the age and birth cohort interaction effect with the transition to divorce, it reduces the significant level of the age and birth cohort interaction effect with the transition to widowhood (W1-W2) on self-rated health (W4) from $p<0.001$ to $p<0.01$ and its magnitude also decreases 14.3 percent. These results suggest that health penalty of the transition to widowhood varies across the life course and birth cohorts, partially because the level of psychological distress from death of a spouse is different for individuals at different life course stages and in different birth cohorts.

DISCUSSION AND CONCLUSION

A long-standing sociological tenet is that the dissolution of marriage from either divorce or widowhood has deleterious effects on individuals' health (Williams and Umberson 2004). Based on a national longitudinal survey, I explore life course and birth cohort variation in the effect of marital dissolution on self-rated health trajectories. Results from growth curve models suggest that transitions from marriage to divorce and widowhood adversely affect self-rated health, although health trajectories of the continuously divorced and widowed are quite similar to those of the continuously married. These results are more consistent with predictions from a "stress" model rather than a "marital resource" model. Moreover, the health penalty of transitions to divorce and widowhood is more apparent at older ages for earlier birth cohorts (before the 1930s); while this penalty is more apparent at younger ages for more recent birth cohorts (after the 1930s). These results may reflect birth cohort differences in the process of aging and/or in the experience of marital dissolution.

Birth cohorts before the 1930s. Results from this study suggest that the negative effects of transitions to divorce and widowhood on self-rated health increase with advancing age for earlier birth cohorts (before the 1930s). Previous studies suggest that older adults may be more vulnerable to traumatic life events such as divorce and widowhood as aging is accompanied by a steady and progressive deterioration in human immune functioning and physical health (Uchino et al. 2000). One possibility is that the aging process is not uniform across birth cohorts (Lynch 2003), and the frailty related to aging may be more relevant to earlier birth cohorts given social and medical progress in health care and disease prevention that promotes healthier aging in more recent birth cohorts.

The negative effects on health are smaller when marital dissolutions occur at earlier ages for the earlier birth cohorts. It may be that individuals from those earlier birth cohorts reached

young adulthood in the era of world wars and economic depression, when mortality was relatively high and death of a spouse might be more anticipated. Bereavement scholars contend that the anticipation of a spouse's death helps the newly widowed to anticipate and prepare, both socially and economically, for widowhood (Rando 1986, but also see Carr et al. 2001). Relief from a care-giver strain may also ameliorate the negative effects of widowhood and keep the survivor healthier (Keene and Prokos 2008). In addition, the pressure to marry and stay married was greater in earlier birth cohorts (Norton and Moorman1987; Manting 1996). It may be that older cohorts include more individuals who were unhappily married but did not divorce when they were young. If that is the case, then a number of those who divorced/separated at younger ages in the earlier birth cohorts may have felt a significant degree of relief following their divorce/separation, thus alleviate the average negative health consequence following divorce.

Birth cohorts after the 1930s. In contrast, the health penalty of widowhood and divorce decreases with advancing age for more recent birth cohorts (after the 1930s). Life is a learning experience and aging implies the summation of development and maturity (Mirowsky and Ross 1992). The growing experience and maturity that comes with aging may dampen the negative effects of marital dissolution on health at later ages. This may be especially true for more recent birth cohorts as they have witnessed more divorces of friends or relatives and they may have access to more coping resources than were available in the past. For example, divorce and bereavement counseling and options for new intimate relationships, including alternatives such as heterosexual cohabitation and same-sax unions become more accessible to more recent birth cohorts (Manting 1996). Moreover, increasing life expectancy and the advancing age at which widowhood occurs have made widowhood at younger ages an increasingly less common

experience among more recent birth cohorts, which may increase its negative effect on health at earlier ages for more recent birth cohorts (Stroebe and Stroebe 1987).

Several study limitations should be considered. First, the number of marital dissolutions is small within some birth cohorts, and this limits my ability to further examine social group (such as gender and race) differences in these patterns. Another disadvantage of small sample size is reduced statistical power to reject the null hypothesis. In spite of this limitation of small sample size, the results show significant life course and birth cohort variation in the effects of marital dissolution on self-rated health trajectories. Second, although the current conceptual framework is built from a causal perspective (either the "marital resource" or "stress" model) suggesting causal effects of marital dissolutions on health trajectories, I can not rule out the possibility that health status may change one's chance of experiencing marital dissolutions—suggesting a potential selection process of marriage. Finally, although I attempt to explore some potential mechanisms to explain the identified life course and birth cohort patterns in the effects of marital dissolution on health, far more sophisticated statistical methods than those used for the current analyses are required to achieve this purpose. Future research should work to identify the precise mechanisms and processes through which marital transitions influence health trajectories at different ages and across birth cohorts.

This study extends the existing research literature in important ways. First, it adds to growing evidence that the transition to divorce or widowhood is more important than the status of divorce or widowhood in shaping health trajectories. More importantly, results from this study qualify conventional views on marital dissolution and point to the importance of considering birth cohort—a key factor defining historical contexts as individuals go through life—in delineating age patterns in the impact of marital dissolution on health. Many studies consider the

impact of marital dissolution on health for middle aged or elderly populations while others control for age in testing the impact of marital dissolution on health for adults of all ages (e.g., Carr et al. 2001). Yet the present results demonstrate that any effects of marital dissolution on health may be cohort dependent as well as age dependent. Birth cohort and age then come together to shape life experiences in ways that may modify the impact of marital dissolution on health. When medical sociologists continue to use a life course perspective to guide research in the areas of health disparities, disregarding the historical context associated with a particular birth cohort may lead to wrong conclusions about life course patterns.

REFERENCES

Becker, Gary. S. 1981. *A Treatise on the Family.* Oxford University Press. Oxford.

Carr, Deborah, James S. House, Camille B. Wortman, Randolph M. Nesse, and Ronald C. Kessler. 2001. "Psychological Adjustment to Sudden and Anticipated Spousal Death among the Older Widowed." *Journal of Gerontology: Social Sciences* 56B (4): S237-48.

CDC. 2004. "State-Specific Prevalence of Current Cigarette Smoking Among Adults --- United States, 2003." *MMWR* 53(44):1035-1037.

Dannefer, Dale. 2003. "Cumulative Advantage/ /Disadvantage, and the Life Course: Cross-Fertilizing Age and Social Science Knowledge." The Journals of Gerontology Series B: Psychological Sciences and Social Sciences 58:S327-S337.

Durden, Emily. 2005. "Does Time Moderate the Association between Marital Status and Self-Reported Health?" Paper presented at the annual meeting of the American Sociological Association, Philadelphia, PA.

Elder, G., Johnson, M., & Crosnoe, R. 2003. "The emergence and development of life course theory". In J. Motimer & M. Schanahan (Eds.), *Handbook of the life course* (pp. 369-388). New York: Plenum.

Ensel, Walter M. and Nan Lin. 2000. "Age, the Stress Process, and Physical Disease." *Journal of Aging and Health* 12(2):139-68.

Gove, Walter R. 1973. "Sex, Marital Status, and Mortality." *American Journal of Sociology* 79: 45-67.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica, 47*, 153-161.

House, James S. 2002. AMERICANS' CHANGING LIVES: WAVES I, II, AND III, 1968, 1989, and 1994 [Computer file]. ICPSR version. Ann Arbor, MI:University of Michigan, Institute

for Social Research, Survey Research Center [producer], 2002. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2003.

House, James S., James M. Lepkowski, Ann M. Kinney, Richard P. Mero, Ronald C. Kessler, and A. Regula. Herzog. 1994. "The social stratification of aging and health." *Journal of Health and Social Behavior* 35: 213-234.

Hughes, Mary Elizabeth and Linda J. Waite. 2009 "Marital Biography and Health at Mid-life." *Journal of Health and Social Behavior* 50(3): 344-358.

Idler, Ellen L. and Yael Benyamini. 1997. "Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior* 38: 21-37.

Joung, Inez M., H. D. van de Mheen, K. Stronks, F. W. van Poppel, and J. P. Mackenbach. 1998. "A Longitudinal Study of Health Selection in Marital Transitions." *Social Science and Medicine* 46(3):425–35.

Keene, Jennifer Reid and Anastasia H. Prokos. 2008. "Widowhood and the end of spousal care-giving: relief or wear and tear?" *Ageing and Society*, 28:551-570.

Lillard, Lee A. and Linda J. Waite. 1995. "Til Death Do Us Part: Marital Disruption and Mortality". *American Journal of Sociology* 100 (5): 1131-1156.

Lynch, Scott M. 2003. "Cohort and Life-Course Patterns in The Relationship Between Education and Health: A Hierarchical Approach." Demography 40(2): 309-331.

Manting, Dorien. 1996. "The Changing Meaning of Cohabitation and Marriage." *European Sociological Review* 12:53-65.

Mineau, G.P., Smith, K.R. & Bean, L.L. (2002). Historical trends of survival among widows and widowers. *Social Science and Medicine* 54(2): 245-254.

Mirowsky, J. and C. Ross. 1992. "Age and Depression". Journal of Health and Social Behavior 33: 187-205.

Merton, Robert K. 1942. "The Normative Structure of Science". In: R.K. Merton, *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago, IL: University of Chicago Press.

Norton, Arthur J. and Jeanne E. Moorman. 1987. "Current Trends in Marriage and Divorce among American Women." *Journal of Marriage and Family* 49(1): 3-14.

Rando, T. A. 1986. "A comprehensive analysis of anticipatory grief: Perspectives, processes, promises and problems". In T. A. Rando (Ed.), *Loss and anticipatory grief (*pp. 3–38). Lexington, MA: Lexington Books.

Ross, Catherine E., John Mirowsky and Karen Goldsteen. 1990. "The Impact of Family on Health: The Decade in Review." *Journal of Marriage and the Family* 52: 1059-1078.

StataCorp LP. (2007). *Stata 10 User's Guide*. StataCorp LP.

Stroebe, Wolfgang and Margaret S. Stroebe. 1987. *Bereavement and Health: The Psychological and Physical Consequences of Partner Loss*. New York: Cambridge University Press.

Thornton, Arland. 1989. "Changing Attitudes toward Family Issues in the United States." *Journal of Marriage and the Family* 51:873–93.

Turner, R. Jay and Franco Marino. 1994. "Social Support and Social Structure: A Descriptive Epidemiology." *Journal of Health and Social Behavior* 35(3):193-212.

Uchino, B.N., Kiecolt-Glaser, J.K., Glaser, R. 2000. "Psychological modulation of cellular immunity." In *Handbook of psychophysiology*. 2 ed. Cambridge, UK: Cambridge University Press.

Umberson, Debra. 1987. "Family Status and Health Behaviors: Social Control as a Dimension of Social Integration." *Journal of Health and Social Behavior* 28: 306-319.

Umberson, Debra, Kristi Williams, Daniel A. Powers, Hui Liu, Belinda Needham. 2006. "You Make Me Sick: Marital Quality and Health Over the Life Course." *Journal of Health and Social Behavior* 47(1) 1-16.

U.S. Census Bureau. 1999. *Statistical Abstract of the United States: 1999.* Washington, D.C: U.S. Government Printing Office.

Waite, Linda J. 1995. "Does Marriage Matter?" *Demography* 32 (4): 483-507.

Waite, Linda and Maggie Gallagher. 2000. *The Case for Marriage: Why Married People Are Happier, Healthier, and Better Off Financially*. New York: Doubleday.

Wheaton, Blair. 1990. "Life Transitions, Role Histories, and Mental Health." *American Sociological Review* 55:209-23.

Williams, Kristi. 2003. "Has the Future of Marriage Arrived? A Contemporary Examination of Gender, Marriage, and Psychological Well-Being." *Journal of Health and Social Behavior* 44(4): 470-487.

Williams, Kristi and Debra Umberson. 2004. "Marital Status, Marital Transitions, and Health: A Gendered Life Course Perspective." *Journal of Health and Social Behavior* 45: 81-98.

TABLE 1. Weighted Descriptive Statistics of Variable Analyzed

	Analysis of Continuously Divorced/widowed (N=987)		Analysis of Transitions to Divorce/widowhood (N=1014)	
	Mean	S.D.	Mean	S.D.
Self-Rated Health T1	3.872	0.935	3.879	0.951
Self-Rated Health T2	3.648	0.905	3.668	0.913
Self-Rated Health T3	3.663	0.943	3.678	0.950
Self-Rated Health T4	2.478	1.025	2.467	1.016
Birth year	1942.528	12.856	1943.506	12.725
Age T1	43.472	12.856	42.494	12.725
Male	0.490	0.500	0.491	0.500
Black	0.077	0.267	0.074	0.262
Education T1	13.091	2.528	13.064	2.477
Income T1 (in $1000)	34.674	19.945	35.915	19.624
Income T2 (in $1000)	39.571	33.546	40.072	32.547
Income T3 (in $1000)	39.375	38.943	38.967	37.611
Income T4 (in $1000)	43.363	35.851	42.188	34.716
Marital duration T1 (in years))	17.419	11.860	17.793	12.978
Death hazard	0.454	0.646	0.407	0.614

TABLE 2. Estimated Effects of Being Continuously Divorced and Widowed on Self-rated Health Trajectories from Growth Curve Models (N=987)

	Model 1		Model 2	
	Latent Intercept	Latent Age Slope	Latent Intercept	Latent Age Slope
Continuously divorced	-0.138	-0.004	-0.095	-0.009
Continuously widowed	-0.024	-0.003	-0.019	-0.002
Continuously divorced X birth cohort			-0.122	-0.003
Continuously widowed X birth cohort			-0.017	0.001
Birth cohort	-0.177***	0.001	-0.163	0.001
Male	0.060	0.000	0.059	0.000
Black	-0.262***	0.003	-0.263	0.003
Education T1	0.064***	0.000	0.064	0.000
Income (*time varying*)	0.001*	0.000	0.001	0.000
Death Hazard	-0.142	0.004	-0.152	0.004
Constant	3.847***	-0.023***	3.846	-0.022
Random Effects				
Level 2 residual (S.D.)	0.613	0.013	0.613	0.013
Level 1 residual (S.D.)	0.691		0.691	
Log restricted-likelihood	-4966.573		-4976.824	

Two-tailed tests: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

TABLE 3. Estimated Effects of Transitions to Divorce and Widowhood on Self-rated Health Trajectories from Growth Curve Models (N=1014)

	Health W2	Health W3	Health W4
Married to divorced W1-W2	-0.040	-0.490**	-0.253
Married to divorced W2-W3		0.219	0.067
Married to divorced W3-W4			-0.140
Married to widowed W1-W2	-0.240	0.100	-0.493**
Married to widowed W2-W3		0.202	0.169
Married to widowed W3-W4			-0.082
Remarried W2-W3		0.472	0.561*
Remarried W3-W4			0.018

	Latent Intercept	Latent Age Slope
Birth cohort	-0.169***	0.000
Male	0.051	-0.001
Black	-0.164**	-0.002
Education W1	0.067***	0.000
Income (*time varying*)	0.001*	0.000
Marital duration W1	-0.009**	0.000
Death hazard	0.013	-0.001
Constant	3.886***	-0.019***
Level 2 residual (S.D.)	0.606***	0.012***
Level 1 residual (S.D.)	0.692***	
Log restricted-likelihood	-5099.748	

Two-tailed tests: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

TABLE 4. Estimated Effects of Transitions to Divorce and Widowhood on Health Trajectories Across Age and Birth Cohort from Growth Curve Models (N=1014)

	Model 1			Model 2		
	Health W2	Health W3	Health W4	Health W2	Health W3	Health W4
Married to divorced W1-W2	-0.024	-0.284	-0.215	-0.163	-0.243	-0.108
Married to divorced W2-W3		0.115	-0.063		0.266	-0.193
Married to divorced W3-W4			-0.265			-0.277
Married to divorced W1-W2 X age W1	0.001	0.016	-0.005	0.082	0.007	-0.026
Married to divorced W2-W3 X age W2		-0.010	-0.029*		-0.046	-0.022
Married to divorced W3-W4 X age W3			-0.024*			0.006
Married to divorced W1-W2 X cohort				0.717	-0.163	-0.240
Married to divorced W2-W3 X cohort					-0.360	-0.053
Married to divorced W3-W4 X cohort						0.443
Married to divorced W1-W2 X age W1 X cohort				-0.005	-0.004	-0.002
Married to divorced W2-W3 X age W2 X cohort					-0.001	-0.013
Married to divorced W3-W4 X age W3 X cohort						0.022*
Married to widowed W1-W2	-0.321	0.499	0.019	-0.366	0.646	0.589
Married to widowed W2-W3		0.280	0.425		0.072	1.067
Married to widowed W3-W4			0.060			-0.387
Married to widowed W1-W2 X age W1	0.005	-0.024	-0.025	0.034	-0.040	-0.048
Married to widowed W2-W3 X age W2		-0.005	-0.013		0.029	-0.041
Married to widowed W3-W4 X age W3			-0.009			0.038
Married to widowed W1-W2 X cohort				0.413	-0.239	-0.958
Married to widowed W2-W3 X cohort					0.209	0.665
Married to widowed W3-W4 X cohort						0.489
Married to widowed W1-W2 X age W1 X cohort				-0.005	0.006	0.035***
Married to widowed W2-W3 X age W2 X cohort					0.005	-0.025
Married to widowed W3-W4 X age W3 X cohort						-0.001
Remarried W2-W3					0.459	0.734*
Remarried W3-W4						0.030
	Intercept	Age Slope		Intercept	Age Slope	
Male	0.059	-0.002		0.060	-0.002	
Black	-0.157*	-0.002		-0.152*	-0.002	
Education W1	0.067***	0.000		0.066***	0.000	
Birth cohort	-0.180***	0.000		-0.187***	0.000	
Family income (*time varying*)	0.001*	0.000		0.001*	0.000	
Marital duration W1	-0.009*	0.000		-0.009*	0.000	
Death hazard	-0.033	0.001		-0.062	0.002	
Constant	3.887***	-0.019***		3.903***	-0.020***	
Level 2 residual (S.D.)	0.605***	0.012***		0.605***	0.012***	
Level 1 residual (S.D.)	0.692***			0.690***		
Log likelihood	-5131.562			-5156.629		

Two-tailed tests: * p<0.05; ** p<0.01; *** p<0.001

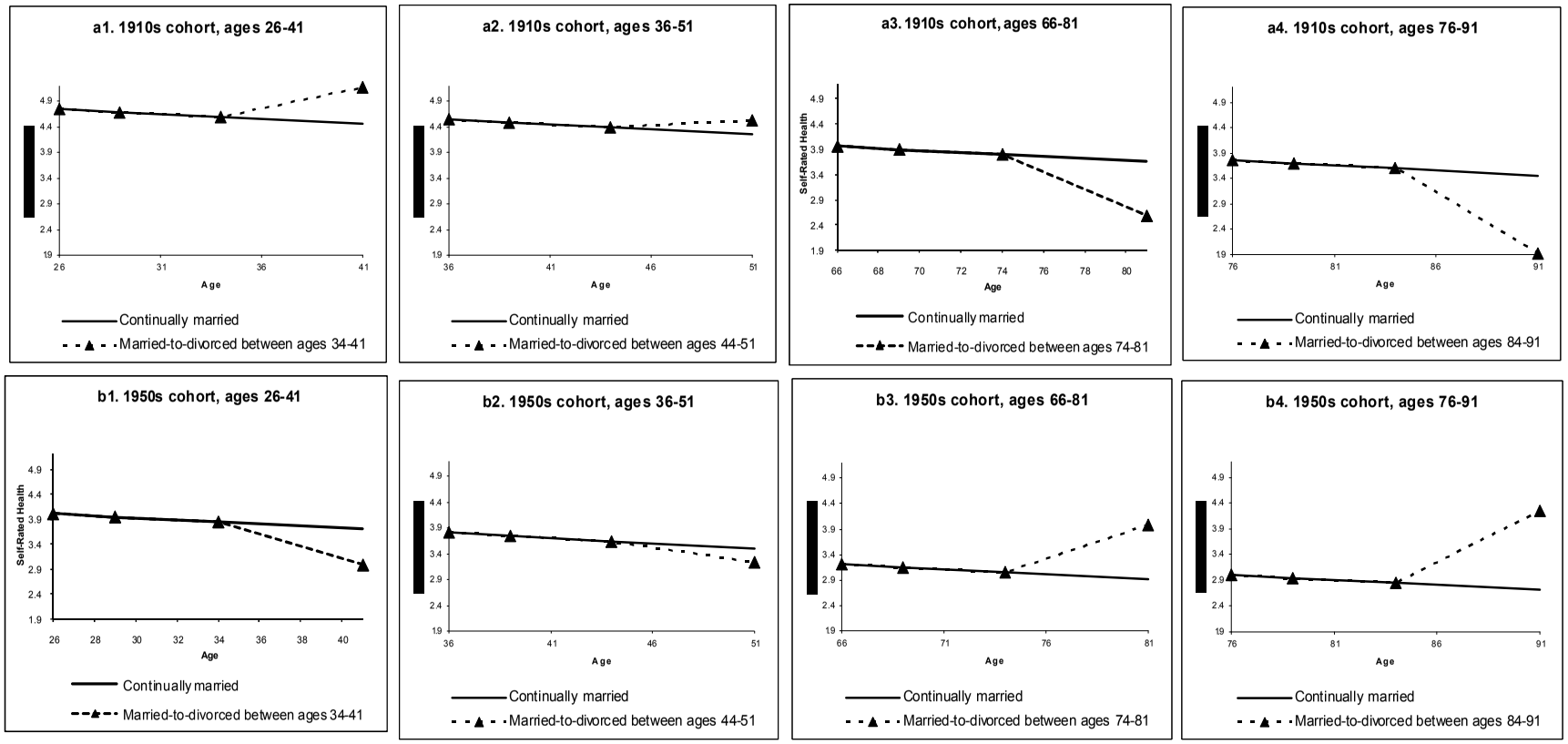

FIGURE 1. Predicted Self-rated Health Trajectories for Those Who Remain Continuously Married and Those Who Transition from Married to Divorced By Age and Birth Cohorts

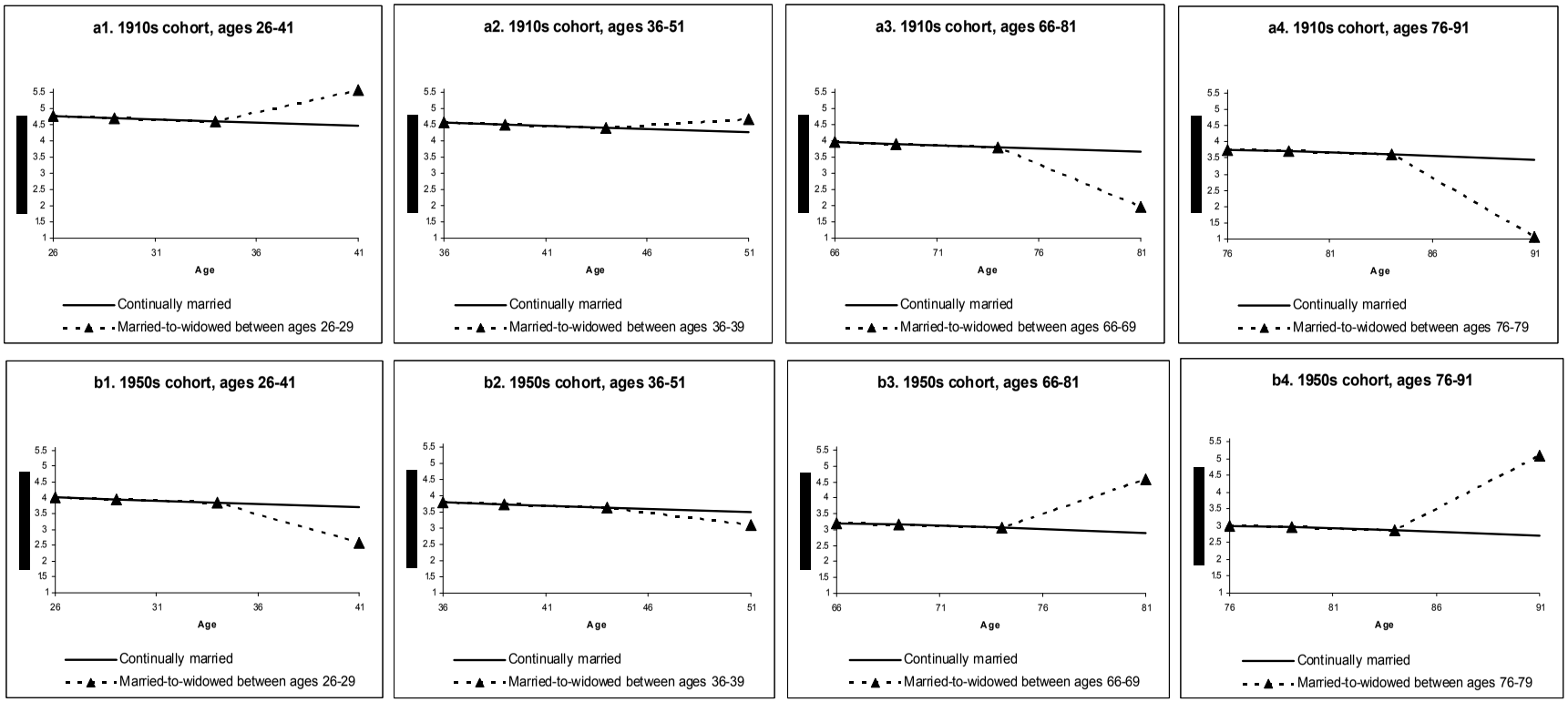

FIGURE 2. Predicted Self-rated Health Trajectories for Those Who Remain Continuously Married and Those Who Transition from Married to Widowed By Age and Birth Cohorts