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Marital quality and health over the life course"

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**YOU MAKE ME SICK:  
MARITAL QUALITY AND HEALTH OVER THE LIFE COURSE\***

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**Abstract**

Lab-based and clinical studies suggest that poor marital quality can undermine physical health and one recent panel survey of a rural community sample reveals a link between marital quality and self-rated health (Wickrama et al. 1997). We work from a life course perspective and identify several reasons to also expect age and gender differences in the link between marital quality and health. We provide longitudinal evidence from a national probability study that negative aspects of marital quality accelerate the typical decline in physical health trajectories over time in a representative sample of adults. We also find that these adverse effects are greater at older ages. However, the effects of marital quality on health seem to be similar for men and women across the life course.

Involvement in social relationships benefits physical health and reduces mortality risk. The evidence linking social relationships to health and mortality is as strong as that linking cigarette smoking, blood pressure, and obesity to health (House, Landis, and Umberson 1988). Moreover, the available evidence indicates that, of the specific relationships studied, the marital relationship holds the greatest significance for health. The married do exhibit better health than the unmarried but it is not the case that any marriage is better than no marriage at all when it comes to health benefits. The quality of relationships is also linked to health. Among the married, those in distressed marriages are in poorer health than those in nondistressed marriages (Burman and Margolin 1992) and individuals in low quality marriages exhibit an even greater health risk than do divorced individuals (Aseltine and Kessler 1993; Williams 2003).

There are several reasons to think that marital quality would be even more important to health as individuals age. First, some theorists suggest that the marital relationship becomes more salient to individuals later in life (Carstensen 1992) and more salient relationships have stronger effects on individual well-being (Simon 1997). Second, immunological impairment increases with age and the stress of poor marital quality might further accelerate aging of the immune system (Kiecolt-Glaser and Glaser 2001). Third, chronic conditions that are exacerbated by stress become increasingly common with age, perhaps creating greater biological vulnerability to stress with age (House et al. 1992). It may be that the juxtaposition of psychosocial risk factors (e.g., marital strain) along with increasing biological vulnerability sets the stage for a stronger effect of marital quality on health with advancing age (Wickrama et al. 2001; House et al.

1992).

The knowledge base on marital quality and health is sound and growing, but currently raises as many questions as it answers. At present, we have no information about how the consequences of marital quality for health might vary over the life course. Most of the available research on marital quality and health relies on age restricted samples and nonrepresentative populations. Therefore, we have no information on possible age/marital quality interactions in predicting health outcomes in the general population. Even those studies with the potential to examine age differences in the effects of marital quality on health (within some age-bounded sample) do not directly examine these possible interactions. Finally, the preponderance of evidence from clinical samples suggests that marital strain may have stronger effects on the health of women than men yet female vulnerability to marital strain may further rely on age and this possibility has not been addressed empirically.

In the present study, we examine longitudinal data (covering an 8-year period) from a national panel survey to address the following questions: (1) How do positive and negative aspects of marital quality affect physical health, and (2) do these effects vary with age and/or gender? We use growth curve analysis to examine health trajectories as continuous processes. This analytical approach also allows us to investigate individual and group heterogeneity in health trajectories over time and as a function of marital quality.

### **Background and Significance**

We work from a life course perspective to assess marital quality and health over

time:

Life course theory is temporal and contextual in locating people in history through birth years and in the life course through the social meanings of age-graded events and activities. The perspective also directs inquiry to processes by which life change occurs and to studies following people over time” (Elder and O’Rand 1995:454).

Life course position may be defined by individual characteristics, particularly age, as well as marital characteristics (e.g., marital duration and prior marital history), and parental status (e.g., age and living arrangements of children). In the present study, we focus primarily on age as an indicator of life course position. Age is a particularly important facet of life course position when the focus is on physical health since there is a strong relationship between age and health and age and mortality (Kaplan 1992). Of course, there is also considerable heterogeneity in the health status of individuals of any given age—as a function of differential stress exposure, access to resources, and biological vulnerability (House et al. 1992; Kaplan 1992). We consider how marital quality may contribute to that heterogeneity.

### **Effect of Marital Quality on Health**

Most of the evidence for a marital quality/health link comes from lab-based studies and clinical samples that focus on cardiovascular and neuroendocrine responses to marital strain or from survey research that relies on community samples.

**Lab-based Studies and Clinical Populations.** Over the past fifteen years, many lab-based studies have focused on neuroendocrine and cardiovascular response to

negative marital interactions. Many of these studies stage and observe marital conflict and collect biomedical data on cardiovascular reactivity and stress hormones. The results provide fairly consistent evidence that physiological changes occur during marital conflict, that marital distress impairs immune response, and that marital conflict increases cardiovascular reactivity (see a review in Burman and Margolin 1992). Most of these studies also find stronger adverse effects (in the form of greater physiological reactivity to conflict) on women than men (e.g., Kiecolt-Glaser et al. 1997; 1998).

These studies are based on stress models where marital conflict is viewed as the stressful stimulus. Stress stimulates the production of stress hormones (cortisol, epinephrine, and norepinephrine are the most commonly examined) and evokes a cardiovascular response (e.g., increased heart rate and blood pressure). The problem arises when a stressor becomes chronic—as marital stress often does—and the stress response is sustained over time. The cumulative impact of prolonged chronic stress exposure and the physiological response may then undermine overall health status in the long run:

...the degree of negativity during marital conflict may be related to the persistence of physiological changes. The key implication of this conceptualization is that physiological responses to stress have cumulative, long term effects on health, including effects on tissue and organ systems, and progression and development of disease.” (Robles and Kiecolt-Glaser 2003:6)

The longer-term effects of marital conflict on health are also seen in clinical populations. One study found that, among 189 patients with congestive heart disease,

marital quality predicted four year survival and this effect was stronger for women (Coyne et al. 2001). In a sample of 292 women with a history of coronary heart disease, Orth-Gomer and associates (2000) found that marital stress almost tripled the risk of recurrent coronary events over a five year period.

**Community-based Surveys.** Most research on marital quality and health focuses on specific physical symptoms or disease outcomes. But a basic assumption of research in this area is that negative marital experiences—through physiological or behavioral mechanisms—will eventually take their toll on global health status. A few community-based surveys provide support for this position. One longitudinal study of women found worsened (self-reported) physical health and an increase in physician visits in relation to prior marital difficulties (Prigerson, Maciejewski, and Rosenheck 1999). Wickrama and colleagues (1997) analyzed data from a rural Iowa community and found a strong link between marital quality and physical illness over a three year period. Marital quality was inversely associated with baseline levels of physical illness as well as the rate of change in illness over time—for both men and women. They conclude that “improving marital quality over time is associated with decreasing physical illness” (Wickrama et al. 1997: 153). In a later longitudinal study, using the same sample, Wickrama and colleagues (2001) found that marital stress significantly increased the risk of hypertension onset for both men and women.

Wickrama’s (Wickrama et al. 1997; 2001) excellent studies provide important evidence about the link of marital quality and health in a community sample, however, as they note, the unique qualities of their sample (white, rural, parents of young children)



preclude generalization to a more diverse population. It may be that the more conservative cultural and family values found in rural, Midwestern communities are associated with a stronger marriage and family orientation and such an orientation may make marital quality more salient to health and well-being than it is in a more typical cross-section of Western society. Moreover, these studies do not consider the possibility of age differences in the consequences of marital quality.

### **Age Differences in the Effects of Marital Quality on Health**

As noted earlier, there are several reasons to expect that the health effects of marital quality would be greater at older ages. House argues that the impact of psychosocial risk factors on health may depend on age and we contend that marital stress is such a risk factor:

...we often fail to understand how various psychosocial risk factors (e.g., health behaviors, social relationships and supports, efficacy or control) relate to one another. Age, race, gender and SES importantly determine or modify the impacts of all of these variables (House 1992:183).

Although clinical studies point to the possibility of age differences in the link of marital strain and health (with greater vulnerability at older ages), this possibility has not been tested directly. Similarly, survey research on marital quality and health has not considered the possibility of age differences in this linkage.

### **Gender**

Gender also shapes social experiences over the life course in ways that may influence marital quality and health outcomes. For example, women consistently report

lower marital quality than men in national surveys (e.g., Umberson et al. 1996) and theoretical work suggests that relationships may be more salient to the well-being of women than men (Gilligan 1982; Gove, Hughes, and Style 1983; Kessler and McLeod 1984). Clinical studies consistently show that women are more physiologically reactive to marital stress than are men (Kiecolt-Glaser et al. 1996). On the other hand, a growing body of evidence indicates that, although men's and women's relationships may differ in quantity and quality, that the same levels of relationship quality have similar effects on the psychological well-being of men and women (Umberson et al. 1996). Moreover, Wickrama and colleagues (1997; 2001) find no evidence of gender differences in their community studies of marital quality and physical well-being. Finally, gender differences in the effects of marital quality on well-being may depend on age and this possibility has not been addressed empirically. Phyllis Moen emphasizes that the "intersection of age and gender produces distinctive life patterns for men and women at all stages of the life course" (1996:171). The importance of marital quality for health may then differ for men and women at different points in the life course.

### **Causal Order**

The stress model suggests that marital quality, particularly marital strain, has a causal effect on physical health, but physical illness may also affect marital quality. While the results are inconsistent, several studies based on small, clinical samples suggest the latter (see a review in Booth and Johnson 1994). Two community surveys provide weaker support for this position. Booth and Johnson (1994) analyze national, longitudinal data and conclude that health decline has only a modest effect on one of two

measures of perceived marital quality. They find stronger effects of a *spouse's* health decline on *respondents'* marital quality. Wickrama et al. (1997) used latent growth curve modeling in their Iowa sample to address the temporal ordering of marital quality and health and conclude:

The effect of marital quality on physical illness accounts for most of the association between marital quality and physical illness of wives and husbands who have been married for a long time, although there may be a reciprocal influence of physical illness on marital quality. (Wickrama et al. 1997:153).

### **Analyzing Health Trajectories**

Some groups and individuals experience relative stability in health over time, while others experience steady or precipitous declines in health, and still others experience improvement in health (House et al. 1992; Kaplan 1992). Growth curve analysis is ideally suited to examining trajectories of change in health over time (McDonough and Berglund 2003; Wickrama et al. 1997). In the present study, we examine trajectories of health over time, using growth curve analysis, and link these trajectories to marital dynamics. Moreover, because we can examine the dynamic relationship between marital quality and health over time, we can begin to address issues of reciprocity and causality between marital quality and health. We address two significant gaps in our understanding of aging, marital relationships, and health by considering how both positive and negative facets of marital quality affect overall physical health in a general population and whether there are age and/or gender differences in these estimated effects.

## DATA AND METHODS

### Data

We use three waves of data from the Americans' Changing Lives (ACL) three-wave panel survey of individuals in the contiguous United States (House 1986). The original sample (aged 24 – 96 in 1986) was obtained using multistage stratified area probability sampling with an oversample of African Americans, persons over 59 years of age, and married women whose husbands were over the age of 64 in 1986. Face-to-face interviews lasting approximately 90 minutes each were conducted with individuals in 1986 (N=3,617), 1989 (N=2,867), and 1994 (N=2,398).

In 1986, 1,904 married individuals who were either Nonhispanic White or African American were interviewed. Seventy-one percent (N=1352) of these individuals were interviewed in all three waves of data collection, while 11.4 percent (N=217) died by 1994, and the rest (17.6%, N=335) did not respond to one or both of the follow-up surveys. Of the 1,352 individuals who were interviewed at all three time points, 78.3 percent (N=1,059) remained married to the same spouse over the 8-year period, 8.4 percent (N=113) divorced, 12.1 percent (N=164) were widowed, and 1.2 percent (N=16) were separated without divorcing during this period.

In this study, we look at the 1,049 individuals who were continuously married across the three waves of data collection and who are either Nonhispanic White or African American (too few cases were available to assess other racial/ethnic groups). We limit our analyses to continuously married individuals only. Of these individuals, 182 were in a second or later marriage in 1986. All analyses include a control variable

indicating whether the individual is in a first or higher-order marriage. Missing data on marital quality reduced the cases in the sample to 1,011 for the measure of positive marital experience and 1,000 for the measure of negative marital experience. In the present study, change over time refers to change over the eight-year study period (from 1986 to 1994).

## **MEASURES**

**Marital Quality.** Current research emphasizes the importance of distinguishing different dimensions of marital quality (Glenn 1990). In preliminary factor analyses, we examined the six questions about marital quality that were asked at all three time points in the ACL. These measures form two latent constructs, which we call positive marital experience and negative marital experience. Scales were created so that higher values indicate higher levels of the intended construct. To ensure that change over time reflects growth rather than change in the measurement scale, the scales for each indicator at each wave of measurement are standardized using the Time 1 mean and standard deviation (Bryk and Raudenbush 1987). To help ensure the comparability of the latent constructs of marital quality over time, the factor loadings are constrained to be equal across waves. Furthermore, to ensure that the latent construct of marital quality is the same from model to model, the same sets of estimated parameter coefficients for the measurement model from the model without covariates are used for further analyses with covariates. All factor loading estimates are statistically significant (and are presented in parentheses below).

*Positive marital experience* is a latent variable composed of four items. The first item, marital satisfaction (1.000), is based on responses to the question, “How satisfied are you with your marriage?” The response categories range from (1) not at all satisfied to (5) completely satisfied. The second (1.178) and third (.876) items are based on responses to the questions, (a) “How much does your (husband/wife) make you feel loved and cared for?” and (b) “How much is (he/she) willing to listen when you need to talk about your worries or problems?” Response categories for both items range from (1) not at all to (5) a great deal. The fourth item (.456) considers whether one’s spouse is a person with whom the respondent can really share their very private feelings and concerns (0 = no, 1 = yes).

*Negative marital experience* is a latent variable measured with two items. First (1.000), respondents were asked, “How often do you feel bothered or upset by your marriage?” Categories range from (1) never to (5) almost always. Second (1.557), respondents were asked, “How often would you say the two of you typically have unpleasant disagreements or conflicts?” Response categories range from (1) never to (7) daily or almost daily.

**Life Course and Sociodemographic Variables.** Our primary proxy for life course position is age of the respondent, measured in years. A squared term for age is also included to check for potential non-linear effects of age. All models are adjusted for the effect of additional socio-demographic characteristics that may be associated with health including, gender (0 = female, 1 = male), race (0 = other, 1 = black), education (number of years completed), and total family income in 1986 (\$1,000s). Initial results

(reported later in Table 2) also include a control variable for parental status as this is a life course indicator that might be associated with health (Mirowsky 2002; Umberson and Gove 1989). However, parental status did not predict health status in our early analyses (reported in Table 2) and was dropped from later analyses (presented in Table 3). Table 1 presents means and standard deviations for all variables in the analysis. For ease of interpretation, household income is measured in increments of \$1,000 in Table 1. In all subsequent models, household income is measured in increments of \$10,000 and all continuous independent variables such as age, education, and family income, are centered at their means.

**Physical Health.** Physical health status is measured with the item, “would you say your health in general is excellent, good, fair, or poor?” (scored 1-4 with 4 indicating better health). Some evidence suggests that individuals tend to compare their health with the health of others their age when making self health appraisals (Idler 1993) yet the validity of self-appraised health as a measure is fairly well-established. Self-appraised physical health is predictive of subsequent disability (Ferraro, Farmer, and Wybraniec 1997; Wilcox, Kasl, and Idler 1996) and mortality (Idler and Benyamini 1997).

## **ANALYTICAL DESIGN**

**Growth Curve Analysis.** Each individual has a marital quality history and a health history. Moreover, everyone begins the ACL study period with different baseline levels of marital quality and health. We are interested in predicting health trajectories from that baseline as well as the dynamic linkages between marital quality and health over time. For example, marital quality may have short-term or long-term consequences

for health trajectories. It is also possible that poor health status has some effect on marital quality trajectories. Growth curve analysis is ideally suited to analyzing the dynamic relationship between marital quality and health over time.

We use latent linear growth models to assess the effects of marital quality constructs, age, and additional control variables on initial level and change in self-rated health over time. Initial level and rate of change in physical health are viewed as growth parameters that vary randomly over respondents. Our models account for systematic variation in growth parameters that is attributable to age and marital quality factors in addition to other control variables. The structural parameters from this part of the model provide the basis for assessing effects of key variables on level and change in physical health. Subsequent models treat marital quality and physical health as two domains of a more complex growth process. These models investigate possible reciprocal effects by allowing the growth trajectory of physical health to depend on initial levels of marital quality in addition to allowing change in marital quality to be affected by initial levels of physical health.

## **GROWTH CURVE RESULTS**

Results from growth curve models with no covariates indicate that physical health changes over the eight-year study period and this change is in the direction of diminishing health over time ( $b = -0.02638$ ;  $p < .0001$ ). We also find evidence of variation in the random intercept ( $\text{var} = 0.6018$ ,  $p < .0001$ ) and variation in the random slope ( $\text{var} = 0.003057$ ,  $p < .0001$ ). This random slope and intercept are negatively correlated with each other ( $\text{cov} = -0.00775$ ,  $p = 0.0694$ ).



### **Estimated Effects of Marital Quality on Physical Health Trajectories**

We begin by estimating growth curve models for the effects of marital quality on initial levels of physical health (the latent intercept seen in Table 2, Panel A) and the rate of change in physical health (the latent slope seen in Panel B) over time. In these models we use positive marital interaction, negative marital interaction, and sociodemographic control variables to predict initial levels of physical health and the rate of change in physical health. The means of the growth parameters reflect level and change in health after controlling for covariate effects. The nonsignificant term for the mean of the latent slope suggests that the rate of decline in health over the study period is explained by the addition of covariates. We will see below how the covariates are associated with physical health over time.

Panel A of Table 2 indicates that positive marital experiences are associated with higher initial levels of physical health while negative marital experiences are not significantly associated with health. Moreover, the link between marital quality (both positive and negative marital experiences) and initial levels of health does not appear to depend on age or on gender (as indicated by nonsignificant interaction terms for sex and age with marital quality). Rather, the presumed benefit of positive marital experiences for initial levels of health appears to be similar for men and women and at different ages. Although the estimated effect of age on the intercept of health is not significant in these full models, it is significantly and negatively associated with health in base models that contain no interaction terms. Also of note is the observation that the well-established poorer self assessed health of women compared to men is not evident in our results.

Additional analyses indicate that this association does exist in the ACL data but only when the sample is not restricted to continually married adults.

Table 2 about here.

Panel B indicates that positive marital experiences are not associated with the rate of change in physical health over time. However, negative marital experiences are significantly associated with the rate of change in physical health over time and this effect appears to depend on age of the respondent (as indicated by the significant interaction of age with negative marital experience in Panel B). We illustrate this age effect in Figure 1 where we present the trajectories of physical health for three age groups (age 30, age 55, and age 80 at time 1) at both high and low levels of negative marital interaction. In this example, “high” refers to those respondents who score two standard deviations above the mean (or higher) on negative marital experience and “low” refers to those who score two standard deviations below the mean (or lower) on negative marital experience.

Figure 1 about here.

Figure 1 suggests that negative marital experience is more important to the health of older than younger individuals. At high levels of negative marital experience, the oldest respondents experience a faster rate of decline in physical health than do the youngest respondents. The predicted trajectory for 80 year olds with the lowest levels of marital strain in Figure 1 suggests that there may also be greater benefits of the *absence* of strain at older ages.

We also assessed the possibility of gender differences in the effects of marital

quality on health and the possibility that gender differences in the effects of marital quality on health might depend on age. None of the gender\*marital quality or gender\*marital quality\*age interactions were statistically significant and were omitted in final models. This suggests that the effects of marital quality on physical health are similar for men and women across the life course even though the effect of negative marital experiences on health trajectories depends on age.

### **Reciprocal Effects Between Marital Quality and Physical Health**

Our growth curve analysis provides evidence that marital quality affects subsequent physical health. However, physical health may also influence levels of marital quality (Booth and Johnson 1994). We investigate the possibility of reciprocity between marital quality and physical health with a latent growth curve analysis in which we estimate individual trajectories of change in marital quality and physical illness and their reciprocal relationships using structural equation models in which both marital quality and physical health are modeled as parallel domains of a more complex growth process. As our primary interest in this part of the analysis is to assess evidence of reciprocity and causal order, we have four growth parameters in the models presented in Table 3: the intercept of initial marital quality ( $a_{MQI}$ ), the slope/linear change in marital quality ( $a_{MQS}$ ), the intercept of initial physical health ( $a_{PHI}$ ), and the slope/linear change in physical health ( $a_{PHS}$ ) . . .

Table 3 about here.

The results presented in Table 3 indicate that initial levels of marital quality (positive and negative aspects) are associated with initial levels of health in the expected

direction (i.e., better marital quality, better physical health) for the total sample as shown by the positive estimated covariance between the latent intercepts of these growth processes ( $S_{PHI,MQI} = .076$ ). Table 3 also shows that initial negative marital experiences affect the rate of change in health over time (more negativity, i.e., a faster decline in health) but that initial physical health does not affect the rate of change in marital quality over time. Thus, we find no evidence that initial levels of health or change in health over time is associated with marital quality trajectories over time (positive or negative marital experiences). Overall, then, these results suggest that the initial levels of negative marital experiences (though not positive experiences) affect health trajectories but do not support the notion of reverse causal order (effects of physical health on marital quality) between marital quality and health for the total sample.

We also estimated the models shown in Table 3, adding a multiple group analysis for three different age groups (24-44, 45-64, 65 and older), to continue our investigation of age differences in the link of marital quality and health (not shown). We find that, consistent with our earlier results, initial levels of positive marital experience are not associated with the rate of change in health for any age group. Also consistent with our previous findings, we find age differences in the estimated effect of initial levels of negative marital experience on the rate of change in physical health. Our multiple group analysis reveals a significant effect of initial marital negativity on trajectories of health only in the oldest age group (i.e., those aged 65 and older) (although the trend is in the same direction at younger ages, the weaker associations do not attain statistical significance).

## DISCUSSION AND CONCLUSION

This study provides the first evidence from a national probability panel study that marital quality has significant estimated effects on physical health trajectories in the general population. Initial levels of *positive* marital experiences are not significantly associated with physical health trajectories but initial levels of *negative* marital experiences serve to accelerate physical health decline over time. It appears then that marital strain erodes overall physical health status over time in a representative sample of adults. Moreover, the adverse effects of negative marital experiences on health trajectories are stronger at older ages. That is, marital difficulties appear to matter more for our health as we age.

### Why Age Matters

Several significant research literatures provide explanations for the apparently increasing physical vulnerability to marital difficulties as we age. First, as individuals age and lose key figures in their lives, they may begin to reflect more on the most important relationships and sources of meaning in their lives (Carstensen, Gottman, and Levinson 1995; Umberson 2003). The majority of married persons identify their spouse as their most important social tie and confidant (Umberson et al. 1996) and, for many individuals, the marital relationship is a central source of meaning. Robin Simon's work (Simon 1997) suggests that relationships carrying more symbolic meaning for individuals and have greater importance for their psychological well-being. In turn, psychological well-being is associated with physical health (Farmer and Ferraro 1997).

Second, marital difficulties may be a key source of stress for individuals and

marital difficulties are often a *chronic* source of stress. Previous research, primarily based on lab studies and clinical samples, shows that marital stress undermines immune function and activates cardiovascular reactivity (Burman and Margolin 1992; Kiecolt-Glaser et al. 1998). Our results suggest that the physiological response to marital strain may have long-term consequences for overall health status. Furthermore, while previous studies have not considered age differences in the effects of marital stress on immune functioning, Kiecolt-Glaser reports that immune functioning declines with age and that stress has more adverse effects on immune functioning as individuals age (Kiecolt-Glaser and Glaser 2001). It follows then that, over time, marital stress would undermine immune functioning more at older ages, thus having stronger adverse effects on health at older ages and our results support this possibility.

Third, chronic conditions become more common with age and these conditions may provide points of biological vulnerability in the face of stress. For example, cardiovascular disease becomes more prevalent with advancing age. If marital stress serves to activate and sustain cardiovascular reactivity (e.g., high blood pressure, elevated heart rate), those persons with cardiovascular disease (among whom the aged are over-represented) may be more vulnerable to this source of stress. Although previous research suggests reasons to expect age differences in the impact of marital quality on health, the present study provides the first empirical evidence that marital quality becomes significantly more important to overall health trajectories as individuals age.

### **Positive Versus Negative Dimensions of Marital Quality**

We examine both positive and negative marital experiences and find that only the

negative experiences serve to shape health trajectories over time. This finding fits with previous research showing that negative aspects of relationships have stronger effects on psychological well-being than do the positive aspects of relationships (Coyne and Bolger 1990; Rook and Pietromonico 1987; Walen and Lachman 2000). Negative aspects of relationships may be more important to psychological well-being because they are so much more salient in the daily lives of individuals than are the positive aspects.

Individuals tend to ruminate over negative relationship encounters and exchanges and to mentally replay those events much more than they replay positive events (Taylor, 1991). In fact, much of cognitive therapy is built around helping individuals to focus less on the negative and more on the positive (Kraaij, Pruymboom, and Garnefski 2002). We suspect that the tendency to worry over negative relationships contributes to the stronger effects of marital negativity that we find in our study. The classic stress and coping perspective is that stress activates a physiological response that, if sustained over time, eventually undermines physical health. The positive aspects of relationships may not have the power to enhance physiological response (e.g., to reduce blood pressure) to the degree necessary to have measurable effects on global health in a nonclinical population.

Our inability to discern significant effects of positive marital experiences on health may also reflect the limitations of our measures. We were constrained by the availability of key measures of both positive and negative marital quality in this study. Improvement in measurement might serve to reveal stronger linkages between marital quality and health than we find here. Of course, this also suggests that, with improved measures, we might find even stronger evidence for the link between marital strain and

health than we find in the present study.

### **Reciprocity Between Marital Quality and Physical Health**

We emphasize the impact of marital quality on physical health trajectories. This emphasis is driven by theoretical work on stress and coping and work on relationships as a potential source of stress in individuals' lives. Yet, we recognize that physical health might also affect marital quality trajectories. For example, physical illness or disability may interfere with one partner's ability to participate in housework, childcare, sexual activity, and paid work activities—all factors that might undermine marital quality. Booth and Johnson (1994) find some evidence of reciprocity in the relationship between marital quality and physical health. On the other hand, Wickrama et al. (1997) find much stronger evidence for a causal effect of marital quality on health than vice versa. The Booth and Johnson (1994) conclusions may differ somewhat because they focus on the *amount* of change in marital quality and health over time while Wickrama et al., (1997) focus on the *rate* of change in marital quality and health. Our growth curve results, focusing on change rates, are very consistent with those of Wickrama and colleagues.

While our results do not rule out the possibility of reciprocity between marital quality and health (in fact, from a theoretical and practical perspective, we assume that reciprocity probably does occur, at least to some extent), they provide some evidence for a stronger causal impact of marital quality on health than vice versa. It may be that our study design serves to underestimate the impact of health on marital quality trajectories. This might occur because a serious illness or health event is required to trigger change in marital quality trajectories and we focus on global physical health rather than key health



events. In addition, previous research suggests that physical illness has more adverse effects on marital quality as perceived by the healthy partner than by the sick partner (Booth and Johnson 1994). In this study, we focus on the respondents' view of marital quality and their own health rather than the health of a partner. Future research should consider both health of respondent and health of partner in relation to marital quality trajectories.

### **Gender**

The life course perspective suggests that men and women experience relationships differently across the life course (Moen 2001)—in ways that might affect both marital quality and health outcomes. Perhaps most significantly, lab-based studies consistently show that women are more physiologically reactive than men in response to marital stress (Kiecolt-Glazer et al. 1996). In light of these findings, we expected that marital quality might have stronger effects on the health of women than men, particularly at older ages. Yet we find no evidence of gender differences in the effects of marital quality on health at any age. The absence of a gender difference might reflect the limitations of our measures. Or it may be that women's greater physiological reactivity in response to marital strain in the lab does not translate into actual cumulative effects on overall health status. While previous research suggests that women are more likely than men to ruminate about their relationship difficulties (Nolen-Hoeksema 2001), rumination and review may even serve as some kind of release in terms of a long-term physiological response to stress among women. Future research should consider that the short-term and long-term physiological responses to stress may differ for men and women and that this

difference may further vary depending on age.

### **Mechanisms Linking Marital Quality and Health**

An important next step is to identify the social, psychological, behavioral, and biological mechanisms through which marital quality affects health at different ages. For example, marital quality may affect health by affecting psychological distress (a psychological mechanism), access to resources (a social mechanism), or health behaviors (a behavioral mechanism) (see Wickrama et al. 1997). Any or all of these mechanisms presumably affect health through biological pathways (e.g., affecting immune functioning or cardiovascular response). Moreover, the most important mechanisms linking marital quality and health may vary depending on age. For example, the impact of marital quality on alcohol consumption may be more important to health at younger ages while the impact of marital quality on medical compliance may be more important at older ages. We are currently analyzing qualitative data from in-depth interviews with couples of different age cohorts to explore some of the dynamics and processes through which marital quality may affect some of these mechanisms. Identification of the mechanisms linking marital quality and health over the life course will ultimately be an interdisciplinary endeavor that requires multiple methodological approaches.

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**TABLE 1. Means and Standard Deviations of Independent Variables (N=1011)\***

	Mean	St. Dev.
Age (years) <sup>a</sup>	49.31	14.56
Age and Living Arrangements of Children		
Minor child at home	.43	.49
Adult child at home	.16	.37
Minor child away	.03	.18
Adult child away	.56	.50
No children	.07	.26
Gender (Male=1)	.46	.50
Race (African American=1)	.19	.39
Education (years)	12.56	2.94
Household income (in \$1,000s) <sup>b</sup>	35.82	24.52
Previous divorce	.18	.38
Marital Quality		
Positive interaction (Time 1)	.00	.66
Positive interaction (Time 2)	-.09	.72
Positive interaction (Time 3)	-.09	.76
Negative interaction (Time 1)	.00	.41
Negative interaction (Time 2)	.06	.49
Negative interaction (Time 3)	.14	.49
Self-rated Health		
Time 1	3.76	.97
Time 2	3.56	.97
Time 3	3.53	1.01

\* The descriptive statistics for the sample of positive marital interaction (N=1011) are reported here.

<sup>a</sup> In all subsequent analyses, this variable is measured in 10-years.

<sup>b</sup> In all subsequent analyses, this variable is measured in \$10,000s.

**TABLE 2. Effect of Marital Quality on Self-Rated Health from Linear Growth Curve Models (N=1,049)**

	A. Latent Intercept		B. Latent Slope	
	Est.	S.E.	Est.	S.E.
<b>1986 Life Course</b>				
Age (in 10 years and centered at 4.93)	-.048	.032	-.004	.004
Age squared	---	---	---	---
Minor child at home	.140	.081	-.017	.011
Adult child at home	-.030	.076	.007	.010
Minor child away	-.044	.161	.000	.022
Adult child away	-.103	.088	.008	.012
<b>Marital Quality</b>				
Positive Marital Experience	.148**	.051	.001	.007
Negative Marital Experience	-.036	.081	-.025*	.011
Age * Positive Marital Experience	-.021	.037	-.003	.005
Age * Negative Marital Experience	-.054	.054	-.015*	.007
<b>Sociodemographic Controls</b>				
Gender (Male=1)	.033	.056	-.009	.008
Race (Black=1)	-.084	.072	.004	.010
Education	.063***	.011	-.002	.001
Household Income (10,000)	.025*	.013	.002	.002
Previous Divorce	.158*	.074	-.020*	.010
Means of Growth Parameters	2.783***	.156	-.001	.021
Variances in Growth Parameters	.497***	.040	.002	.002
R-Square		.191		.189

Two-tailed tests: \*p<.05; \*\*p<.01; \*\*\*p<.001.

- indicates the parameter not in model; @0 indicates the parameter fixed at 0.

**TABLE 3: Estimated Effects of Reciprocal Relationships between Marital Quality and Physical Health (ML Estimates with Robust Standard Errors) (N=1049)**

	Latent Intercept of Marital Quality (MQI)	Latent Slope of Marital Quality (MQS)	Latent Intercept of Physical Health (PHI)	Latent Slope of Physical Health (PHS)
<b>Positive Interaction</b>				
Initial MQ	—	—	—	.007
Initial PH	—	-.001	—	—
Means of Growth Parameters	-.060	-.014	.031***	-.004
Variances in Growth Parameters	.377***	.002***	.517***	.002
R-Square	.062	.039	.163	.075
COV ( $\gamma_{MQS}$ $\gamma_{MQI}$ )	.001			
COV ( $\gamma_{PHS}$ $\gamma_{PHI}$ )	-.006			
COV ( $\gamma_{PHI}$ $\gamma_{MQI}$ )	.068***			
COV ( $\gamma_{PHS}$ $\gamma_{MQS}$ )	.000			
Model Fit Index	CFI=0.985	RMSEA=0.048		
<b>Negative Interaction</b>				
Initial MQ	—	—	—	-.026***
Initial PH	—	.001	—	—
Means of Growth Parameters	.065	.012*	3.029***	-.002
Variances in Growth Parameters	.159***	.001***	.517***	.002
R-Square	.053	.023	.163	.123
COV ( $\gamma_{MQS}$ $\gamma_{MQI}$ )	.002***			
COV ( $\gamma_{PHS}$ $\gamma_{PHI}$ )	-.007			
COV ( $\gamma_{PHI}$ $\gamma_{MQI}$ )	-.023*			
COV ( $\gamma_{PHS}$ $\gamma_{MQS}$ )	.000			
Model Fit Index	CFI=0.964	RMSEA=0.078		

Two-tailed test: \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ ;

— indicates the parameter not in model;

Age, male, black, education, family income and previous divorce are controlled in both models, unless the effect is 0 and they are dropped from the final model.

**FIGURE 1: Predicted Trajectories of Self-Assessed Health for Selected Values of Negative Marital Experience by Age from Linear Growth Curve Model**

