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For Better or for Worse: Health and Marital Quality during Midlife

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Abstract

Objective: To examine how changes in health are associated with marital quality over a 20-year period of midlife. **Background:** The health benefit associated with marriage (compared to non-marriage) is well established. Less work has explored how health and changes in a couple's health are associated with the marital relationship. **Method:** We used a sample of continuously married individuals who participated in three waves of the Midlife in the United States study (n = 1768). Multilevel modeling separated within-person changes and between-person differences in the effect of health on marital quality during midlife and older ages. **Results:** Marital support was lower and marital strain was higher for those with worse health relative to peers. Marital quality decreased when health decreased. Effects were particularly strong when spouses' health statuses became more discrepant. **Conclusion:** Health—of both self and partner—plays an important role in determining the marital quality of married persons during the midlife years.

Keywords

chronic illness, health, marital quality, marital strain, midlife

For Better or for Worse: Dynamics of Health and Marital Quality during Midlife

A marital relationship is a significant social relationship established in adulthood, which is central to one's well-being and health (Bradbury & Karney, 2014). A large body of literature has established that married adults live longer, have better mental health, report fewer chronic conditions and disabilities, and have better financial health than their unmarried counterparts (Pienta et al., 2000; Umberson et al., 2013; Waite, 2005; Waite & Gallagher, 2002; Zhang et al., 2016). This "marriage benefit" is even stronger for those in high-quality marital relationships (Robles et al., 2014), while marital distress has been linked to poorer overall well-being and health (Bookwala, 2005; Hawkins & Booth, 2005. The vast majority of research documenting the health benefit of marriage has focused on characteristics of the relationship as a predictor of well-being or health, and has used research designs that compare married persons to unmarried persons or those with high versus low marital quality (Proulx et al., 2007; Robles et al., 2014). By contrast, the current study focuses on how an individual's overall health and how changes in the couple's health may be associated with change in the marital relationship. Growing evidence indicates that when married individuals experience health problems, the quality and nature of the marital relationship may change (Booth & Johnson, 1994; Yorgason et al., 2008; Yorgason & Choi, 2016).

We utilize a 20-year longitudinal study of continuously married adults to explore how the health of the couple during midlife—a time when the onset of chronic conditions is common (Case & Deaton, 2015; Latham & Peek, 2013)—is related to the overall quality of the marital relationship. This study is important because it extends the large body of research that has established a marriage benefit (i.e. married persons are healthier than non-married persons) by flipping the causal ordering and exploring how health is associated with the marital relationship. It examines variability in the relationship between health and marital quality across married adults (interindividual variability), as well as within a married couple over time (intraindividual variability) (Hoffman, 2015; Hoffman & Stawski, 2009). Results will better illuminate how marital relationships might absorb, buffer, and/or be threatened by the common health changes that occur within married adults during midlife. They will provide a more nuanced perspective of the marriage benefit, illustrating how health can be both an outcome of the marital

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relationship and a dynamic feature of the relationship that requires adaptation and adjustment by both partners over time.

Marriage and Marital Quality

Population estimates suggest that nearly 80% of persons enter into a marital union at some point in the life course (Wang & Parker, 2014), with most entering a first marriage during their mid to late 20s (U.S. Census Bureau, 2017). Although about 40–50% of marriages end in divorce (Kazdin, 2000) and all marriages are at risk of ending in widowhood when one spouse dies, most persons live at least some, and oftentimes a large, portion of their adulthood in a marital union. Among the cohort who first married in the 1960s, about 60% of men and 50% of women celebrated a 40th or greater wedding anniversary. Among those who first married in the 1970s, more than half celebrated a 30th or greater anniversary (Kreider & Ellis, 2011). These statistics indicate that a majority of persons, even those in more recent marriage cohorts, are on track to achieve long-lasting marital relationships.

Just as the formation and dissolution of marriage are structured by developmental life stages, the quality of a marital relationship has been found to wax and wane over the life course (Amato et al., 2003; Bradbury et al., 2000; Johnson et al., 1992). For example, marital happiness tends to decline gradually during the first 20 years of marriage, and then stabilizes during long-lasting marriages (Amato & James, 2018). Marital quality has also been found to fluctuate in response to life course transitions that commonly occur within a midlife couple, such as a parent's death (Stokes, 2016), the illness of a child (Bemister et al., 2014), the loss of a job (Howe et al., 2004), and weight gain of one or both partners (Chen et al., 2018).

There is not a single definition of what constitutes good versus bad relationships; most marriages are characterized as having both positive and negative aspects (Yorgason & Choi, 2016). *Marital support*, defined as a spouse demonstrating availability, validation, and encouragement, is an example of positive marital quality. *Marital strain* encompasses the negative, yet common, feelings of conflict, tension, and disharmony that often exist within a marital relationship. These two dimensions of marital quality are not opposite ends of a single continuum, and may, in fact, be experienced simultaneously within the same couple, sometimes leading to feelings of marital ambivalence and increased risk for marital dissolution (Huston et al., 2001). Persons with poor marital quality are consistently found to be at risk for poorer health and well-being outcomes (Kang & Marks, 2016; Miller-Martinez et al., 2014; Shapiro & Keyes, 2008), reinforcing the need to understand marital quality as an outcome in and of itself.

Marriage and Health

A large body of literature has found that social relationships, in general, are associated with better health throughout the life course (House et al., 1988; Umberson & Montez, 2010). Marital relationship is often considered the most influential social relationship for an individual's health and well-being (Waite & Gallagher, 2002). Consistent with the notion of a "marriage benefit," married persons have been found to have higher life expectancy (Kaplan & Kronick, 2006; Robards et al., 2012) and lower rates of morbidity (Kiecolt-Glaser & Newton, 2001) than nonmarried persons. Married persons are also more likely than unmarried persons to engage in positive health behaviors such as physical activity, eating well, wearing seat belts, and not smoking (Schone & Weinick, 1998). Related studies using measures of marital quality, as opposed to a comparison of married to unmarried persons, have also found positive health benefits. Marital relationships that are more positive, equitable, and have low strain are consistently associated with better health outcomes (Bookwala, 2005; Robles et al., 2014), suggesting that the quality of a marital relationship is an important factor underlying the "marriage benefit."

Theoretically, married persons and especially those with high marital quality are thought to experience better health as a result of social selection, social support, and/or social control. The social selection hypothesis suggests that healthier persons are more likely to enter into a union, therefore leading to better health overall among married compared to unmarried persons (Goldman, 1993). The social support hypothesis suggests that the marital relationship provides emotional, financial, and instrumental support to the members of a couple, allowing each member of a couple to experience less stress and better health overall (Sherbourne & Hays, 1990). The social control hypothesis rests on the assumption that one member of the couple reminds and encourages the other to maintain healthful practices, such as seeing a doctor or getting routine screenings, leading to better overall health (Umberson, 1992). Each of these theoretical explanations assumes that marriage and the marital relationship promote and preserve the health of each partner; however, given the salience of the marital relationship in the lives of midlife adults, marriage should also be conceptualized as the context in which stressful life events must be absorbed and managed.

Health Changes within a Marriage

Stressful life events, such as the onset of a chronic illness or disability, are not experienced by an individual alone; they occur within a relational context (Giese-Davis et al., 2000). Because the marital relationship represents an interconnected and dynamic system, when one partner experiences a stressful event, the other partner may experience stressors as well; this is referred to as a stress crossover effect (Bolger et al., 1989). Stressful life events, whether experienced personally or absorbed through a stress crossover effect, are linked to how couples perceive the relationship overall. The dyadic stress and coping framework (e.g. Berg & Upchurch, 2007;

Bodenmann, 1995, 1997, 2005; Helgeson et al., 2018; Lee & Roberts, 2018; Lyons et al., 1998; Revenson, 1994, 2003) is often applied to understanding how couples cope with health-related stressors: when one partner experiences a change in health, the homeostasis of the couple is threatened, requiring both partners to negotiate what these health changes mean for themselves and for the relationship. Spouses may experience distress when seeing the partner suffer or be unwell (Monin & Schulz, 2009). Or, the couple's everyday dynamic and routines might be disrupted by the onset of a chronic condition, potentially leading to a revision of the couple's roles and responsibilities, thereby increasing the stress of the couple. Furthermore, it is not uncommon for married persons to experience anxiety or anticipatory grief related to the potential death of a spouse or their inability to engage in planned goals and shared activities (McLean & Nissim, 2007). Finally, others may feel overburdened and underprepared if they are expected to reduce work hours and/or provide long-term care to their ailing spouse (Loureiro et al., 2014). Even though the illness or disability befalls a single body, the couple shares the experiences and adjustments associated with the onset and then management of a chronic condition. Thus, a change in one partner's health during midlife will likely impact both partners' overall well-being, as well as their shared relational outcomes such as their perception of marital quality (Cohan & Bradbury, 1997; Karney & Bradbury, 1995; Lee & Roberts, 2018; Pearlin et al., 1990).

Research has commonly explored how an individual's health is linked to one's own well-being (Schilling et al., 2018), but far less has explored how an individual's health is associated with the well-being of other family members or how it modifies the marital quality of the couple (López-Espuela et al., 2018). Existing studies tend to focus on the spouse's need to provide instrumental and personal care to the ailing spouse, as well as the feelings of burden that oftentimes come with the caregiving role (e.g. Croog et al., 2006; Zarit et al., 1980). Extant literature has examined discordant health statuses within caregiving couples (e.g. Monin et al., 2019; Polenick et al., 2019). However, relatively little is known about how the onset of chronic illness within a couple is associated with one's perceptions of marital quality, or how spouses negotiate resultant health discrepancies that occur when one spouse becomes ill and the other remains relatively healthy. The literature that does exist suggests that marital quality will be most adversely affected when one partner remains in good health, while the other partner experiences poor or declining health (Booth & Johnson, 1994; Yorgason et al., 2008).

To better understand the role of health and health changes within a marital relationship, it is important to examine not only the onset of each spouse's chronic conditions but also the potential discrepancies of chronic health conditions across partners. This requires a longitudinal design, where both health and relationship quality are measured prospectively within the context of couple-based relationships and as they occur naturally over time. Previous research linking marriage and health has relied mostly on cross-sectional analyses that are not able to tease apart the causal time-ordering of the marriage benefit, or on small samples where couples were exposed to experimentally induced marital conflict or hypothetical disease scenarios in a controlled laboratory setting (Carr & Springer, 2010).

The Current Study & Hypotheses

This study uses a nationally representative sample of continuously married persons from the Midlife in the United States (MIDUS) study to explore the dynamics of health and marital quality over time. Given that most chronic health conditions and functional impairments occur during middle and older ages, midlife is the ideal developmental time period to model how health changes within a couple are associated with one's marital quality. Moreover, the three-wave longitudinal structure of the MIDUS sample provides a 20-year window of health and marital quality within continuously married midlife and aging couples.

In line with developmental health trajectories, we assumed that health would decline and chronic conditions would increase over the 20-year period captured by the MIDUS sample (i.e. age ranges 25–74 to 45–94). In line with the dyadic stress and coping literature, we expected that the onset of chronic conditions and increased functional limitations of one or both partners would challenge and alter the marital relationship, leading to the following specific hypotheses about perceptions of marital quality: reports of marital quality would be poorer for those:

1. with poorer overall health, and following the times when one's own health declines;
2. whose spouse's overall health is poor, and following the time when the spouse's health declines; and
3. with higher discrepancy between partners' overall health and following the time when the discrepancy across partners widens.

This study provides a contextualized and dynamic view of how health changes within a couple might be associated with changes in the marital relationship. Given the importance of the marital relationship to overall health and well-being, results illustrate a potential mechanism underlying the marriage-health benefit and have implications for the health and well-being of older adults.

Method

Data & Sample

Data come from a three-wave longitudinal survey called MIDUS study. MIDUS was collected by the MacArthur Foundation Research Network on Successful Midlife

Development, as a multidisciplinary effort to better understand the behavioral, psychological, and social factors that account for age-related variations in the health and well-being of the American population (Ryff et al., 2017).

MIDUS 1 was conducted via telephone and mail survey in 1995/1996, utilizing a nationally representative random-digit–dial sample of noninstitutionalized English-speaking adults selected from working telephone banks in the coterminous United States. The original sample consisted of 7108 midlife adults, aged 25–75 years at the time. MIDUS 2 was conducted 10 years later. MIDUS 3 was repeated in 2013–2015, resulting in a longitudinal dataset that captures 20 years of midlife and older ages, the time period where most chronic health conditions emerge. MIDUS 2 and 3 are follow-up surveys of the original MIDUS 1 sample; no new participants were added to the sample during follow-up waves. MIDUS 3 includes a total of 3294 persons (46% of the original MIDUS 1 sample).

Our analytic sample was conceptually limited to persons who were continuously married across all three waves (n = 1768), excluding from the analytic sample those who were separated/divorced (n = 485), widowed (n = 362), never married (n = 232), had unknown marital status (n = 4), or who had remarried (n = 443) prior to Wave 3. Sample eligibility was determined by using a combination of variables: (1) current marital status from each wave and (2) how many times married from each wave. If the number of times married was equivalent in all three waves, and the individual had a marital status of "married" at all three waves, then they were included in the analytic sample. For example, if an individual was in their second marriage in Wave 1, and if they continued to have a marital status of "married" and times married remained constant at "2" during Waves 2 and 3, then that person would be included in the analysis. Using a continuously married sample controls for any confounding effects that may alter marital quality during a newlywed period and the period preceding marital dissolution (i.e. separation or divorce) or spousal death, giving us a unique opportunity to model the long-term dynamics of health and marital quality within married couples.

Measures

Self-report survey data were used to create trajectories of *marital quality* (dependent variable) and *health* (independent variable) across a 20-year time period for each participant. Because health and marital quality might vary under different sociodemographic contexts, all analyses control for *age* (25–74 years at baseline), *gender* (male and female), *education* (less than college degree, and college degree or above), and *race* (non-Hispanic white or other). Variables measuring marital quality and health were measured at each of the three waves, while demographic control variables were measured at baseline only.

Marital quality was measured with two variables, capturing both positive and negative dimensions of the marital relationships—*marital support* and *marital strain*. Both were operationalized by calculating an average response across 6 items, each measured with a 4-point response category from 1 (often) to 4 (never). *Marital support* included six items: How much does your spouse care about you, understand you, appreciate you, rely on you, open up to you, and allow you to relax and be yourself? This scale was reverse-coded so that higher scores reflect higher support. Cronbach's alpha from the current study is .90. *Marital strain* was measured with six items: How often does your spouse make too many demands, argue with you, make you feel tense, criticize you, let you down, and get on your nerves? We reverse-coded these items so that higher scores reflect higher marital strain. Cronbach's alpha from the current study for the marital strain scale is .91.

Health was measured with four separate variables that capture different dimensions of one's overall health, chronic conditions, and disability: *chronic conditions* are a self-reported count of up to 20 chronic conditions such as asthma, diabetes, stroke, high blood pressure, emotional disorders, and alcohol or drug problems. *Functional limitations in activities of daily living* (ADL) are an average of 3 items related to how one's health affects essential functions of daily life such as bathing and dress, each measured with 4-point response category ranging from a lot to not at all. *Functional limitations in instrumental activities of daily living* (IADL) are an average of 7 items related to how one's health affects more complex functions of daily life such as carrying groceries, each measured with 4-point response category ranging from a lot to not at all. *Self-rated health* is a single-item measure of one's overall health, with response options of 1 excellent, 2 very good, 3 good, 4 fair, and 5 poor. All health variables are scaled so that higher numbers indicate greater health problems or poorer overall health, and lower numbers indicate fewer health problems or better overall health.

The MIDUS sample is not a dyadic sample, so was not able to capture data directly from both partners of the marital relationship. However, the participating spouse answered a global health question in regard to both self and partner, creating for a fifth variable measuring *partner's perceived health.* This single-item variable was measured on the same 5-point Likert scale as the self-rated health variable (1 excellent, 2 very good, 3 good, 4 fair, and 5 poor).

The parallel measurement of self-rated health and partner's perceived health allowed for a sixth measure describing how much *health discrepancy* existed between the two spouses. It was calculated as the absolute value of self-rated health minus partner's perceived health; both measured as 1 excellent, 2 very good, 3 good, 4 fair, and 5 poor. The resulting variable ranged from 0 to 4, with 4 indicating a wide discrepancy (i.e. excellent health for one spouse and poor for the other) and 0 indicating no discrepancy between the health of spouses (i.e. both excellent and both poor).

Analysis

We used multilevel modeling for purposes of hypothesis testing. Multilevel models separate *within-person* variations (i.e. how changes in health at the individual level are linked to marital quality) and *between-person* variations (i.e. how an individual's health, high or low compared to others, is associated with marital quality) (Hoffman, 2015; Hoffman & Stawski, 2009). Our multilevel model includes two levels, with Level 1 represented by the following equation

$$\text{Martial quality} = \pi_{0i} + \pi_{1i}(\text{Time})_{ti} + \pi_{2i}(\text{Health})_{ti} + \pi_{3i}(\text{Age})_{ti} + r_{ti}$$

and Level 2 represented by these equations

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Mean health})_i + \beta_{02}(\text{Gender})_i + \beta_{03}(\text{Race})_i + \beta_{04}(\text{Education})_i + r_{0i}$$

$$\pi_{1i} = \beta_{10}$$

$$\pi_{2i} = \beta_{20}$$

$$\pi_{3i} = \beta_{30}$$

In Level 1, the measure of "health" was group (person)-mean centered, whereas "mean health" at Level 2 represents each person's average health score across the three time points, which then was grand-mean centered. The slope (β_{20}) represents the within-person health effect on marital quality, and β_{01} represents the between-person health effect on marital quality. These are the coefficients used for hypothesis testing. All models control for sociodemographic covariates (age, gender, race, and education), and time (Waves 1, 2, and 3). Time (β_{10}) and age (β_{30}) are Level 1 covariates because they are time varying, while gender (β_{02}), race (β_{03}), and education (β_{04}) are Level 2 covariates because they are time invariant. This methodology is ideal to explore the dynamics of health and relationship quality over time, as it allows us to track the effect of health changes that occur over time, as well as having better or worse health overall on marital quality among midlife and aging couples.

A total of 10 multilevel models were estimated to explore the unique relationships among five conceptualizations of health (i.e. chronic conditions, functional limitation-ADL, functional limitation-IADL, self-reported health, and partner's perceived health) and our two dimensions of marital quality (i.e. support and strain). Each of these models includes only a single measure of health as independent variable. A second set of multilevel models explored how both the level of health and the emergence of health discrepancy within the couple are associated with marital quality over time; these models, one for each outcome measure, included both self-rated health and partner's perceived health together as predictors of marital quality.

Given the number of separate models we estimated for hypothesis testing (i.e. 2 outcomes × 6 predictors), there is an increased risk of making a Type 1 error and incorrectly rejecting a null hypothesis. We applied the most conservative standards to our analyses, identifying statistical significance at a Bonferroni-adjusted α value ($p \leq .004$), calculated by α/m, where α is the standard .05 level and m is the number of separate hypotheses to be tested (12). All statistical analyses report the actual estimated p-value, rather than using the traditional * to identify standard statistical significance, allowing the reader to apply both traditional standards and the more conservative adjusted metrics for hypothesis testing.

All analyses were estimated using maximum likelihood techniques so that under the assumed statistical models, the observed data are most probable. SAS was used to import and clean the dataset downloaded from the MIDUS Colectica Portal (http://midus.colectica.org). SPSS version 25 (IBM) was used to run all descriptive and multivariate analyses.

Results

Table 1 describes our analytic sample, which consisted of 1768 continuously married men (51.3%) and women (48.7%), ranging in age from 25 to 92 years across the course of the longitudinal study. With 10-years separating each of the three longitudinal waves in the MIDUS study, the sample was 25–74 at Wave 1, 34–83 at Wave 2, and 42 to 92 at Wave 3. The sample was largely white (91.9%), with high levels of education (41.8% with college degree or above).

As an initial step, we used random-effects linear growth models to empirically confirm that health problems increased and overall health status decreased over time, as expected. As shown in Table 2, models included time coded as 0 (MIDUS 1), 1 (MIDUS 2), and 2 (MIDUS 3), such that the intercept (β_{00}) represented mean health at Time 1 and the slope (β_{20}) represented changes in health over time. Both intercept and slope were statistically significant across each of the 5 health measures, indicating between-person variability in baseline levels of health (intercepts) as well as changes in all health issues (slopes) over time. Similarly, intraclass correlation coefficients calculated from variance estimates obtained from unconditional (empty) growth models of each key variable indicated that 47.54% of variance in the number of chronic conditions, 28.32% of variance in ADL, 48.13% of variance in IADL, 47.94% of variance in self-reported health, 53.46% of variance in partner's perceived health, 55.56% of variance in marital support, and 62.45% of variance in marital strain were between-persons. These preliminary results confirm the appropriateness of our analytic strategy to look at both the independent and dependent variables in a longitudinal framework where both between-person differences and within-person changes are estimated.

Table 1. Means and Range of Key Variables among Continuously Married Midlife Adults (n = 1768).

	Mean MIDUS 1	Mean MIDUS 2	Mean MIDUS 3	Range
Control variables				
Age (years)	45.86	54.74	63.85	25–92
Gender (% female)	48.7%			
Education (% college degree or more)	41.8%			
Race (% white)	91.9%			
Dependent variables–Marital quality				
Marital support	3.66	3.67	3.66	1–4
Marital strain	2.18	2.13	2.09	1–4
Independent variables–health				
Chronic conditions	2.01	2.05	2.99	0–20
Functional limitation-ADL	1.08	1.16	1.32	1–4
Functional limitation-IADL	1.40	1.62	1.89	1–4
Self-rated health	2.23	2.28	2.49	1–5
Partner's perceived health	2.26	2.40	2.58	1–5

Note. ADL = activities of daily living; IADL = instrumental activities of daily living.

Table 2. Linear Change in Health among Continuously Married Midlife Adults (n = 1768).

	Chronic conditions	Functional limitation-ADL	Functional limitation-IADL	Self-rated health	Partner's perceived health
Fixed effects	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	B (*SE*)
Intercept (β_{00})	1.89 (.05)***	1.07 (.01)***	1.39 (.02)***	2.20 (.02)***	2.25 (.02)***
Time (β_{10})	.46 (.03)***	.12 (.01)***	.24 (.01)***	.13 (.01)***	.17 (.01)***
Random effects	*Variance*	*Variance*	*Variance*	*Variance*	*Variance*
Intercept (r_0)	2.24***	.03***	.24***	.40***	.51***
Time slope (r_1)	.66***	.06***	.08***	.05***	.08***
Residual (e)	2.16***	.11***	.19***	.40***	.37***

Note. *** Coefficients are statistically significant at $p \leq .001$. ADL = activities of daily living; IADL = instrumental activities of daily living.

Table 3 provides additional introductory analyses, showing a correlation matrix of the five independent variables measuring health, revealing statistically significant bivariate associations across every measure. As expected, the two measures of functional impairment (ADL and IADL), which are conceptually and empirically similar, had the strongest correlation ($r = .64$, $p < .001$). The lowest correlation values were from associations among the variable measuring partner's perceived health status and the variables measuring the participant's health status (e.g. chronic conditions, ADL, IADL, and self-rated health) ($r = .09$–$.25$, $p < .001$), suggesting that the health statuses of spouses were interdependent, but not necessarily in a direct or substantive way. Overall, these bivariate results indicate that while the five health variables were correlated, they were not identical. Thus, we confirm the appropriateness of our hypothesis testing strategy, where we estimated the effect of each health variable on the marital quality variables separately (i.e. 10 separate models), allowing us to explore which type of health issue (i.e. functional impairment, chronic condition, and overall health status of self or partner) is most influential on which dimension of marital quality (i.e. marital support and marital strain).

Table 4 presents the results of our hypothesis testing. As expected, nearly all of the models (8 out of 10) found statistically significant between-person variations of health on marital quality, suggesting that poorer health was associated with lower marital support and higher marital strain. These models indicated that a higher average number of chronic conditions, increased functional impairments (IADL, but not ADL), poorer self-rated health, and poorer perceived health of partner were all associated with higher levels of marital strain and lower levels of marital support over time.

Some of the models presented in Table 4 also found evidence of statistically significant within-person variations, indicating that changes in the couple's health were associated with changes in marital quality over time. For example, an increase in the number of chronic conditions was associated with lower marital support ($t = -2.62$, $p = .01$) and higher marital strain ($t = 2.97$, $p = .003$). In addition, a greater increase in the partner's perceived health was associated with

Table 3. Correlation Matrix of Health Variables among Continuously Married Midlife Adults (n = 1768).

	Chronic conditions	Functional limitation ADL	Functional limitation IADL	Self-rated health	Partner's perceived health
1. Chronic conditions	1.00				
2. Functional limitation-ADL	.21***	1.00			
3. Functional limitation-IADL	.41***	.64***	1.00		
4. Self-rated health	.38***	.23***	.45***	1.00	
5. Partner's perceived health	.11***	.09***	.17***	.25***	1.00

Note. All variables measured at MIDUS-1 (baseline). Cell values represent Pearson's correlation values r. *** indicates a statistically significant correlation, p<.001. ADL = activities of daily living; IADL = instrumental activities of daily living.

Table 4. Longitudinal Predictions of Health on Marital Quality among Continuously Married Midlife Adults (n = 1768).

	Marital support			Marital strain		
Chronic conditions	*B* (*SE*)	*t*	*p**	*B* (*SE*)	*t*	*p**
Intercept	3.73 (.02)	166.73	<.001	2.16 (.03)	79.41	<.001
Health (within-person)	−.01 (.004)	−2.62	.01	.01 (.004)	2.97	.003
Health (between-person)	−.03 (.01)	−4.93	<.001	.05 (.01)	6.93	<.001
Functional limitation ADL	*B* (*SE*)	*t*	*p**	*B* (*SE*)	*t*	*p**
Intercept	3.74 (.02)	166.39	<.001	2.15 (.03)	77.84	<.001
Health (within-person)	−.02 (.02)	−1.05	.30	.03 (.02)	1.64	.10
Health (between-person)	−.05 (.03)	−1.84	.07	.09 (.03)	2.52*	.01
Functional limitation IADL	*B* (*SE*)	*t*	*p**	*B* (*SE*)	*t*	*p**
Intercept	3.74 (.02)	166.75	<.001	2.15 (.03)	78.14	<.001
Health (within-person)	−.04 (01)	−.33	.75	.01 (.01)	.85	.40
Health (between-person)	−.08 (.02)	−4.67	<.001	.12 (.02)	5.62	<.001
Self-rated health	*B* (*SE*)	*t*	*p**	*B* (*SE*)	*t*	*p**
Intercept	3.75 (.02)	167.42	<.001	2.13 (.03)	77.51	<.001
Health (within-person)	−.02 (.01)	−1.90	.06	.02 (.01)	1.63	.10
Health (between-person)	−.08 (.01)	−6.34	<.001	.10 (.02)	6.20	<.001
Partner's perceived health	*B* (*SE*)	*t*	*p**	*B* (*SE*)	*t*	*p**
Intercept	3.74 (.02)	173.78	<.001	2.14 (.03)	80.28	<.001
Health (within-person)	−.07 (.01)	−7.52	<.001	.08 (.01)	8.72	<.001
Health (between-person)	−.15 (.01)	−13.01	<.001	.16 (.01)	11.38	<.001

Note. Each block of estimates represents a separate model, with one independent variable (i.e. chronic condition, functional impairment ADL or IADL, self-rated health, and partner's perceived health) and one dependent variable (i.e. marital support or marital strain). All models control for sociodemographic covariates (age, gender, race, and education), and time (Waves 1, 2, and 3). Full model results with covariates and time are available from the author by request. *p is the p-value estimated for each model. Given the number of models estimated, the Bonferroni-adjusted p-value (.004) is recommended to evaluate statistical significance. ADL = activities of daily living; IADL = instrumental activities of daily living.

both a decrease in marital support ($t = -7.52, p < .001$) and an increase in marital strain (t = 8.72, p < .001).

Our final analyses were used to test hypotheses whether whether marital quality was associated with discrepant health statuses within a couple. Descriptive trends of the discrepancy variable found a mean discrepancy of .78 at Wave 1, .87 at Wave 2, and .93 at Wave 3, revealing that, on average, couples tended to have fairly similar levels of overall health, with discrepancy widening over time. Table 5 presents the results of a multilevel model estimating both the within-person and between-person variations of the couple's health discrepancy on marital quality, while controlling for the average level of the participant's self-reported health. Between-person estimates suggest that individuals who reported higher levels of discrepancy between partners, regardless of their own self-rated health status, had lower levels of marital support (t = −4.45, p < .001) and higher levels of marital strain ($t = 2.79, p = .01$). Within-person estimates suggest that as the discrepancy widened within the couple, there was a greater decrease in reports of marital support ($t = -2.50, p =$ .01) and a greater increase in perceptions of marital strain ($t =$ 2.17, p = .03).

The MIDUS sample includes a large age-range, representing early midlife through old ages. Thus, additional

Table 5. Longitudinal Predictions of Couple-Level Health Discrepancy on Marital Quality among Continuously Married Midlife Adults (n = 1768).

	Marital support			Marital strain		
	B (*SE*)	*t*	*p*	*B* (*SE*)	*t*	*p*
Intercept	3.82 (.03)	133.18	<.001	2.07 (.03)	60.64	<.001
Self-rated health	−.03 (.01)	−4.54	<.001	.03 (.01)	4.11	<.001
Health discrepancy (within-person)	−.02 (.01)	−2.50	.01	.02 (.01)	2.17	.03
Health discrepancy (between-person)	−.07 (.02)	−4.45	<.001	.06 (.02)	2.79	.01

Note. All models control for sociodemographic covariates (age, gender, race, and education) and time (Waves 1, 2, and 3). Full model results with covariates and time are available from the author by request.

exploratory analyses were conducted to see whether age potentially moderated the relationship between health and marital quality. In general, compared to older age participants who experienced poor health and health changes, younger age participants with similar health characteristics and health dynamics exhibited lower support and higher strain within their marriage. See the "Supplemental Materials" for these exploratory results.

Discussion

This study, using the three-wave longitudinal design of the MIDUS study, examined both within-person and between-person associations between health and marital quality across continuously married midlife couples, who commonly encounter health declines associated with the emergence of chronic conditions and functional impairments in one or both partners. It is one of a few studies to examine the role of health on marital quality, rather than the more common causal association that links the marital relationship to better health outcomes (Umberson & Montez, 2010; Waite, 2005).

As expected and consistent with our hypotheses, marital support was lower and marital strain higher for those (a) with higher mean levels of poor self-reported health, (b) whose partner's perceived health was poorer, and (c) who had more discrepant health from their partner. These results are all between-person variations, relative to their peers. Capitalizing on the longitudinal nature of these data, results also found evidence of within-person variations, such that marital quality decreased when (a) the number of chronic conditions increased, (b) the partner's perceived health decreased, and (c) the health discrepancy among partners widened over time. To be specific, we found both within-person and between-person variations on marital quality when using a variable capturing the partner's perceived health, but only between-person variations for variables measuring the participants' own health and functioning. That is, changes in the one's own health were not associated with marital quality, but perceived changes in the partner's health were associated with marital quality. This implies that individuals may be particularly sensitive to their partner's health status when evaluating the quality of their marital relationship.

Together, these results reinforce the large body of literature linking health and relationship quality (e.g. Berg & Upchurch, 2007; Bodenmann, 1995, 1997, 2005; Lee & Roberts, 2018; Lyons et al., 1998; Revenson, 1994, 2003). Yet, they provide a more nuanced perspective of the marriage benefit commonly reported in the literature (Umberson & Montez, 2010; Waite, 2005)—for example by showing how the changes in health that commonly occur during midlife and older ages in one or both partners are related to the marital relationship. Accordingly, health should not be conceptualized as only the outcome of a marital relationship, but as a dynamic feature or characteristics of the relationship that requires adaptation and adjustment by both partners over time. Likewise, the marital relationship should be conceptually redefined as both a predictor of health and the context in which health changes are absorbed.

Interpreting the current results within a dyadic stress and coping framework, we assume that changes in the couple's health likely threatened the homeostasis of the married couple are linked to changes in their overall relationship quality. Couples behave as a system and operate according to regulatory principles. The onset of a new chronic condition or a change in one of the partner's overall health status has the potential to disrupt the system, affecting the individual patient, as well as the spouse (e.g. Berg et al., 2008). For example, a couple's normal dynamic and daily routines may become no longer viable when one partner becomes chronically ill or functionally impaired, leading to perceived and actual changes in both partners' roles and responsibilities. Or, individuals with chronic conditions may experience physical pain and threats to their own autonomy, leading to a spouse needing to take on a caregiving role, which can lead to psychological struggles, feeling pressured to be strong, and less autonomy due to the increased roles and responsibilities associated with being a caregiver. As another example, a couple facing new health issues might experience financial problems associated with the long-term management of a chronic condition or an inability of one or both partners to continue participating in paid employment. Finally, couples may encounter challenges in communicating about these new health issues. These dynamics, created by poorer health on average or following health changes in one or both partners,

will be linked to changes in the marital relationship overall, which we observed as decreased levels of marital support and increased levels of marital strain among the continuously married couples of the MIDUS sample.

This study has several strengths. First, we used a large nationally representative sample of US adults. In addition, we used multiple measures of marital quality, capturing both positive and negative dimensions of marriage and multiple independent measures describing the health status of both spouses, over time and in comparison to one another. Our measurement approach capturing multiple dimensions of health and marital quality allowed for a more complete understanding of the marital implications associated with different types of health issues that commonly emerge during midlife.

Nevertheless, this study also has several limitations. It examined only one spouse in the spousal dyad. Findings of research using only one spouse might not fully capture the interdependence of romantic relationships. In addition, the MIDUS sample comprised primarily Caucasians adults, and our analytic sample further restricted it to those who were married for 20 or more years. These limit the findings' generalizability to the broader population of US adults; however, they also allowed us to present the most comprehensive analysis, to date, of how health changes within a couple are linked to the relationship quality of that couple. Finally, our sample restriction to continuously married couples was necessary to explore longitudinal changes in marital quality, but limited our results to those couples who remained married, no matter how much strain or how little support they felt in their relationship, and was therefore not able to capture how health during midlife might precipitate more extreme marital outcomes such as divorce or separation.

This study has implications for future research. Most importantly, this analysis provides a foundation for future longitudinal research that investigates possible mechanisms or intervening factors that underlie the role of health on marital quality (e.g. perceived stress, social support, caregiving obligations, financial changes, and role changes within the marriage that are associated with one or both spouses becoming ill). Furthermore, our results showing lower levels of support and higher levels of strain associated with poorer levels and greater changes in the couple's health may well be signaling even greater changes within the marital relationship that we were not able to capture within our continuously married couples—for example, lower marital support and higher marital strain may be a precursor to marital ambivalence and serve as a potential pathway toward other marital outcomes such as divorce or separation. Expanding these longitudinal analyses beyond a continuously married sample, and with an eye toward better identifying the intervening factors linking a couple's health with marital quality, is recommended.

Additional research questions regarding for whom these effects are strongest could also be posed. For example, because the onset of chronic illness is more normative and considered to be more *on-time* for older than younger adults (Neugarten et al., 1965; Nowakowski & Sumerau, 2017), age is a critically important characteristic to be explored within these dynamics. Older married couples, compared to their younger counterparts, likely benefit from having practiced and refined their collaborative coping skills earlier in life (Berg & Upchurch, 2007), potentially lessening the impact of health events on their relationship outcomes. The exploratory analyses presented as Supplemental Materials found compelling initial evidence that the age at which health problems appear have differential effects on the relationship quality of the couple, with younger persons experiencing more adverse relationship outcomes. Furthermore, because women are often more relationally oriented than men, they may be more responsive than men to the health changes that befall the couple during midlife (Cross & Madson, 1997; Helgeson, 1994). Socioeconomic resources or education may also modify how a couple adjusts to the onset of health problems during midlife. Future research should explore how these types of variables create differential relationship responses for different persons, based on their age, gender, or socioeconomic resources.

In sum, the onset of new health problems within midlife couples, although not unexpected during midlife and older ages, should be considered a stressor for married couples and a predictor of the couple's relationship quality. As illustrated by these results, such health changes have the potential to be associated with not only the patient but also the partner's perceptions of marital quality. Health education, intervention programs, and community resources should be provided to married couples during midlife, with a particular goal of supporting and recognizing the potential challenges that might be faced by both members of the couple when someone experiences a change in health or functional status.

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Supplemental Material

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References

Amato, P. R., & James, S. L. (2018). Changes in spousal relationships over the marital life course. In D. Alwin, D. Felmlee, & D. Kreager (Eds.), *Social networks and the life course. Frontiers in sociology and social research* (*Vol. 2*). Springer.

Amato, P. R., Johnson, D. R., Booth, A., & Rogers, S. J. (2003). Continuity and change in marital quality between 1980 and 2000. *Journal of Marriage and Family*, *65*, 1-22.

Bemister, T. B., Brooks, B. L., Dyck, R. H., & Kirton, A. (2014). Parent and family impact of raising a child with perinatal stroke. *BMC Pediatrics*, *14*, 182.

Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin*, *133*, 920-954.

Berg, C. A., Wiebe, D. J., Butner, J., Bloor, L., Bradstreet, C., Upchurch, R., Hayes, J., Stephenson, R., Nail, L., & Patton, G. (2008). Collaborative coping and daily mood in couples dealing with prostate cancer. *Psychology and Aging*, *23*, 505-516.

Bodenmann, G. (1995). A systemic-transactional conceptualization of stress and coping in couples. *Swiss Journal of Psychology*, *54*, 34-49.

Bodenmann, G. (1997). Dyadic coping-a systemic-transactional view of stress and coping among couples: Theory and empirical findings. *European Review of Applied Psychology*, *47*, 137-140.

Bodenmann, G. (2005). Dyadic coping and its significance for marital functioning. In T. Revenson, K. Kayser, & G. Bodenmann (Eds.), *Emerging perspectives on couples coping with stress*. American Psychological Association.

Bolger, N., DeLongis, A., Kessler, R. C., & Wethington, E. (1989). The contagion of stress across multiple roles. *Journal of Marriage and the Family*, *51*, 175-183.

Bookwala, J. (2005). The role of marital quality in physical health during the mature years. *Journal of Aging & Health*, *17*, 85-104.

Booth, A., & Johnson, D. R. (1994). Declining health and marital quality. *Journal of Marriage and the Family*, *56*, 218-223.

Bradbury, T. N., Fincham, F. D., & Beach, S. H. (2000). Research on the nature and determinants of marital satisfaction: A decade in review. *Journal of Marriage & Family*, *62*(4), 964-980.

Bradbury, T. N., & Karney, B. R. (2014). *Intimate relationships* (2nd ed.). Norton.

Carr, D., & Springer, K. W. (2010). Advances in families and health research in the 21st century. *Journal of Marriage and Family*, *72*, 743-761.

Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences of the United States of America*, *112*, 15078-15083.

Chen, Y., Kawachi, I., Berkman, L. F., Trudel-Fitzgerald, C., & Kubzansky, L. D. (2018). A prospective study of marital quality and body weight in midlife. *Health Psychology*, *37*, 247-256.

Cohan, C. L., & Bradbury, T. N. (1997). Negative life events, marital interaction, and the longitudinal course of newlywed marriage. *Journal of Personality and Social Psychology*, *73*, 114-128.

Croog, S. H., Burleson, J. A., Sudilovsky, A., & Baume, R. M. (2006). Spouse caregivers of Alzheimer patients: Problem responses to caregiver burden. *Aging & Mental Health*, *10*, 87-100.

Cross, S. E., & Madson, L. (1997). Elaboration of models of the self: Reply to Baumeister and Sommer (1997) and Martin and Ruble (1997). *Psychological Bulletin*, *122*, 51-55.

Giese-Davis, J., Hermanson, K., Koopman, C., Weibel, D., & Spiegel, D. (2000). Quality of couples' relationship and adjustment to metastatic breast cancer. *Journal of Family Psychology*, *14*, 251-266.

Goldman, N. (1993). Marriage selection and mortality patterns: Inferences and fallacies. *Demography*, *30*, 189-208.

Hawkins, D. N., & Booth, A. (2005). Unhappily ever after: Effects of long-term, low-quality marriages on well-being. *Social Forces*, *84*(1), 451-471.

Helgeson, V. S. (1994). Long-distance romantic relationships: Sex differences in adjustment and breakup. *Personality & Social Psychology Bulletin*, *20*, 254-265.

Helgeson, V. S., Jakubiak, B., Van Vleet, M., & Zajdel, M. (2018). Communal coping and adjustment to chronic illness: Theory update and evidence. *Personality and Social Psychology Review*, *22*, 170-195. PMCID: PMC 5878976.

Hoffman, L. (2015). *Longitudinal analysis: Modeling within-person fluctuation and change*. Routledge.

Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development*, *6*, 97-120.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, *241*(4865), 540-545.

Howe, G. W., Levy, M. L., & Caplan, R. D. (2004). Job loss and depressive symptoms in couples: Common stressors, stress transmission, or relationship disruption?. *Journal of Family Psychology*, *18*, 639-650.

Huston, T. L., Caughlin, J. P., Houts, R. M., Smith, S. E., & George, L. J. (2001). The connubial crucible: Newlywed years as predictors of marital delight, distress, and divorce. *Journal of Personality and Social Psychology*, *80*, 237-252.

Johnson, D. R., Amoloza, T. O., & Booth, A. (1992). Stability and developmental change in marital quality: A three-wave panel analysis. *Journal of Marriage & Family*, *54*, 582-594.

Kang, S. W., & Marks, N. F. (2016). Marital strain exacerbates health risks of filial caregiving: Evidence from the 2005 National Survey of Midlife in the United States. *Journal of Family Issues*, *27*, 1123-1140.

Kaplan, R. M., & Kronick, R. G. (2006). Marital status and longevity in the United States population. *Journal of Epidemiology and Community Health*, *60*, 760-765.

Karney, B. R., & Bradbury, T. N. (1995). The longitudinal course of marital quality and stability: A review of theory, methods, and research. *Psychological Bulletin*, *118*, 3-34.

Kazdin, A. E. (2000). *Encyclopedia of psychology* (Vol. 8). American Psychological Association.

Kiecolt-Glaser, J. K., & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin*, *127*(4), 472-503.

Kreider, R. M., & Ellis, R. (2011). *Number, timing, and duration of marriages and divorces: 2009. Current population reports*. U.S. Census Bureau.

Latham, K., & Peek, C. W. (2013). Self-rated health and morbidity onset among late midlife U.S. Adults. *The Journals of Gerontology: Series B: Psychological Sciences And Social Sciences*, *68*, 107-116.

Lee, E., & Roberts, L. J. (2018). Between individual and family coping: A decade of theory and research on couples coping with

health-related stress. *Journal of Family Theory & Review*, *10*, 141-164.

López-Espuela, F., González-Gil, T., Amarilla-Donoso, J., Cordovilla-Guardia, S., Portilla-Cuenca, J. C., & Casado-Naranjo, I. (2018). Critical points in the experience of spouse caregivers of patients who have suffered a stroke. A phenomenological interpretive study. *Plus One*, *13*, Article e0195190.

Loureiro, L. de S. N., Fernandesdas, M.G. M., da Nóbrega, M. M. L., & Rodrigues, R. A. P. (2014). Overburden on elderly's family caregivers: association with characteristics of the elderly and care demand. *Revista brasileira de enfermagem*, *67*, 227-232.

Lyons, R. F., Mickelson, K. D., Sullivan, M. J., & Coyne, J. C. (1998). Coping as a communal process. *Journal of Social and Personal Relationships*, *15*, 579-605.

McLean, L. M., & Nissim, R. (2007). Marital therapy for couples facing advanced cancer: Case review. *Palliative & Supportive Care*, *5*, 303-313.

Miller-Martinez, D., Seeman, T., Karlamangla, A. S., Greendale, G. A., Binkley, N., & Crandall, C. J. (2014). Marital histories, marital support, and bone density: Findings from the Midlife in the United States study. *Osteoporosis International*, *25*, 1327-1335.

Monin, J. K., Manigault, A., Levy, B. R., Schulz, R., Duker, A., Clark, M. S., Van Ness, P. H., & Kershaw, T. (2019). Gender differences in short-term cardiovascular effects of giving and receiving support for health concerns in marriage. *Health Psychology*, *38*, 936-947.

Monin, J. K., & Schulz, R. (2009). Interpersonal effects of suffering in older adult caregiving relationships. *Psychology and Aging*, *24*(3), 681-695.

Neugarten, B. L., Moore, J. W., & Lowe, J. C. (1965). Age norms, age constraints, and adult socialization. *American Journal of Sociology*, *7*, 710-717.

Nowakowski, A. C. H., & Sumerau, J. E. (2017). Aging partners managing chronic illness together: Introducing the content collection. *Gerontology & Geriatric Medicine*, *3*, 2333721417737679.

Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist*, *30*, 583-594.

Pienta, A. M., Hayward, M. D., & Jenkins, K. R. (2000). Health consequences of marriage for the retirement years. *Journal of Family Issues*, *21*, 559-586.

Polenick, C. A., Birditt, K. S., Turkelson, A., & Kales, H. C. (2019). Individual-level and couple-level discordant chronic conditions: Longitudinal links to functional disability. *Annals of Behavioral Medicine*, *54*, 455-469.

Proulx, C. M., Helms, H. M., & Buehler, C. (2007). Marital quality and personal well-being: A meta-analysis. *Journal of Marriage and Family*, *69*, 576-593.

Revenson, T. A. (1994). Social support and marital coping with chronic illness. *Annals of Behavioral Medicine*, *16*, 122-130.

Revenson, T. A. (2003). Scenes from a marriage: Examining support, coping, and gender within the context of chronic illness. In J. Suls & K. Wallston (Eds.), *Social psychological foundations of health and illness* (pp. 530-559). Bllackwell publications..

Robards, J., Evandrou, M., Falkingham, J., & Vlachantoni, A. (2012). Marital status, health and mortality. *Maturitas*, *73*, 295-299.

Robles, T. F., Slatcher, R. B., Trombello, J. M., & McGinn, M. M. (2014). Marital quality and health: A meta-analytic review. *Psychological Bulletin*, *140*, 140-187.

Ryff, C., Almeida, D. M., Ayanian, J., Carr, D. S., Cleary, P. D., Coe, C., & Williams, D. (2017). *Midlife in the United States (MIDUS)*. Inter-university Consortium for Political and Social Research [distributor].

Schilling, O. K., Deeg, D. J. H., & Huisman, M. (2018). Affective well-being in the last years of life: The role of health decline. *Psychology and Aging*, *33*, 739-753.

Schone, B. S., & Weinick, R. M. (1998). Health-related behaviors and the benefits of marriage for elderly persons. *The Gerontologist*, *38*, 618-627.

Shapiro, A., & Keyes, C. L. M. (2008). Marital status and social well-being: Are the married always better off? *Social Indicators Research*, *88*, 329-346.

Sherbourne, C. D., & Hays, R. D. (1990). Marital status, social support, and health transitions in chronic disease patients. *Journal of Health and Social Behavior*, *31*, 328-343.

Stokes, J. E. (2016). The influence of intergenerational relationships on marital quality following the death of a parent in adulthood. *Journal of Social and Personal Relationships*, *33*, 3-22.

Umberson, D. (1992). Gender, marital status and the social control of health behavior. *Social Science & Medicine*, *34*, 907-917.

Umberson, D., & Montez, J. K. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, *51*(1, Suppl), S54-S66.

Umberson, D., Thomeer, M. B., & Williams, K. (2013). Family status and mental health: Recent advances and future directions. In C. S. Aneshensel, J. C. Phelan, A. Bierman, C. S. Aneshensel, J. C. Phelan, & A. Bierman (Eds.), *Handbook of the sociology of mental health* (pp. 405-431). Springer Science + Business Media.

U.S. Census Bureau (2017). *Estimated Median Age at First Marriage, by sex: 1890 to the Present*. https://www.census.gov/data/tables/time-series/demo/families/marital.html

Waite, L. (2005). Marriage, family and health. *Family Matters*, *70*, 54-55.

Waite, L, & Gallagher, M (2002). *The case for marriage: Why married persons are happier, healthier, and better off financially*. Broadway Books, Random House, Inc.

Wang, W., & Parker, K. (2014September). *Record share of Americans have never married: As values, economics and gender patterns change*. Pew Research Center Social & Demographic Trends http://www.pewsocialtrends.org/2014/09/24/record-share-of-americans-have-nevermarried/.

Yorgason, J. B., Booth, A., & Johnson, D. (2008). Health, disability, and marital quality: Is the association different for younger versus older cohorts?. *Research on Aging*, *30*, 623-648.

Yorgason, J. B., & Choi, H. (2016). Health contributions to marital quality: Expected and unexpected links. In J. Bookwala & J. Bookwala (Eds.), *Couple relationships in the middle and later years: Their nature, complexity, and role in health and illness* (pp. 177-196). American Psychological Association.

Zarit, S. H., Reever, K. E., & Bach-Peterson, J. (1980). Relatives of the impaired elderly: Correlates of feelings of burden. *The Gerontologist*, *20*, 649-655.

Zhang, Z., Liu, H., & Yu, Y. (2016). Marital biography and health in middle and late life. In J. Bookwala & J. Bookwala (Eds.), *Couple relationships in the middle and later years: Their nature, complexity, and role in health and illness* (pp. 199-218). American Psychological Association.