How Husbands' and Wives' Physical Health are linked to Their Marital Satisfaction

by

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Abstract

Spouses reap many benefits from marriage, from being healthier to recovering better from illnesses. The majority of the research explaining why married people are healthier has assumed marriage contributes to health and, for the most part, overlooked how health contributes to marriage. The current study found, however, that spouses' health was associated with both their own marital satisfaction and their partners' marital satisfaction. More specifically, in a sample of 32 older adults, this study found that how spouses felt about their health, but not the diseases they were diagnosed with, was correlated with their partners' marital satisfaction. The current study also found that wives' number of doctor-diagnosed diseases was linked to their own marital satisfaction and husbands' subjective health was linked to their own marital satisfaction. In the rapidly aging society that is upon us, these findings have the potential to help professionals working with older adults and older adults themselves. If older couples knew how to deal with the stress that comes along with their health, it could possibly help to stem the decline in marital satisfaction that has been found to characterize long-term marriages.

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Table of Contents

List of Tables

List of Figures

Introduction

Married people are, for the most part, healthier than their unmarried counterparts. Not only do they feel physically better, they are in fact physically healthier, recover better from illness, and even live longer (Chun & Lee, 2001; Goodwin, 1987; Kiecolt-Glaser & Newton, 2001; Ross, Mirowsky, & Goldsteen, 1990). Although there is clearly strong evidence linking marriage and health, most of these studies focus exclusively on the impact of marriage on health, with researchers only beginning to address the effect of health on marriage (Campbell, 1993). Although the majority of studies acknowledge the bidirectional relationship between marriage and health, they continue to make the assumption that the most significant direction of effects is how marriage affects health (Wilson & Oswald, 2005). Maybe this is the case; however, these studies have drawn this conclusion as a result of samples that are comprised primarily of younger, healthy individuals (Duncan, Greg, Wilkerson, & England, 2006; Kahn & Williamson, 1990; Kahn, Williamson, & Stevens, 1991). Of the studies that do examine the effects of health on marriage, these studies tend to focus on individuals with extreme non-normative health issues (e.g., trauma, heart disease, and cancer; Kulik, Heike, & Mahler, 2006). Given the discrepancy in the approaches of these two literatures, it is hard to draw a conclusion regarding the direction of effects and their relative strength in the relationship between marriage and health.

From the literature that examines the impact of non-normative health issues on marriage, it is clear that for those who are in pain, as the severity of the illness increases, so too does the negative impact on their marriage (Flor, Turk, & Scholz, 1987; Soderberg, Strand, Haapala, &

Lundman, 2003). For example, patients struggling with chronic pain have significantly lower marital satisfaction, compared to patients without pain (Flor et al.,). Although these studies provide compelling evidence linking severe cases of poor health to marriage, can we conclude that this is the way normative health is related to marriage? In other words, is there a linear relationship between health and marriage, such that as health deteriorates, so too does the quality of the marriage or is it the case that health impacts marriage only in extreme non-normative health cases? With over a third of retired adults dealing with normative health issues such as arthritis and back pain (Pienta, Hayward, & Jenkins, 2000), it is imperative to answer this question in order to understand if and how normative health affects the marriage. Given that the majority of the literature has focused on extreme health issues (Wilson & Oswald, 2005), we can only speculate as to the relationship between health and marriage for the population in general.

Therefore, a study was needed that examined the effects of health on marital satisfaction in a population with normative health concerns. Over thirty five percent of older adults deal with normative health issues (e g., arthritis, high blood pressure; Pienta et al., 2000) and both subjective and objective health declines in the later years of life for even the healthiest individuals (Bookwala, 2005; Umberson, Williams, Powers, Liu, & Needham, 2006). It is likely that these relatively normative declines will have an impact on marital satisfaction, making older adult couples an ideal population to examine the effects of health on marriage. These effects might otherwise not be detectable in younger samples in which good health is enjoyed by most individuals. Further, given that there are two people in a marriage, we need to also understand how each spouses' health impacts not only their own feelings about their marriage, but each others' evaluations of their marriage. Accordingly, the current study has examined how the

objective and subjective health of both partners was associated with their marital satisfaction in a sample of older married, community-dwelling couples.

Literature Review

Theories of Marriage and Health

For decades, marriage has been ranked as one of the most significant contributors to life satisfaction (Cherlin, 2004). For many people, marriage can be one of the longest lasting relationships of their lives, with many older adults being married for several decades. The health benefits of these long-lasting marriages continue to accumulate over time (Dupre & Meadows, 2007), which may explain why mortality differences between married and unmarried adults increase steadily with age (Murphy et al., 2007). To understand why married individuals—in particular, older adults— are not only healthier, but also live longer, two models have been developed to explain the relationship between marriage and health.

The first model, proposed by Burman and Margolin (1992), gives a detailed overview of the marital factors that influence physical health. In their theory of marriage and health (see Figure 1), they propose that how a couple interacts can only affect their marital status (e.g., getting a divorce) if their marital quality is affected. This model also proposes that marital quality has a bidirectional relationship with marital interaction, suggesting that not only does a couple's marital quality affect how they interact, but how the couple interacts also affects their marital quality. Marital status, interaction, and quality are proposed to have bidirectional relationships with stress (e.g., health problems), psychological processes (e.g., cognitions and affect), and support (e.g., social relationships). A bidirectional relationship is also thought to exist between stress, support, coping, and psychological processes. It is important to note that

these are the only pathways in the theory that gender is thought to moderate. For example, gender is thought to moderate the relationship between stress and psychological processes but is not thought to moderate the relationship between coping strategies and psychological processes. The model then proposes that psychological processes have a bidirectional relationship with coping strategies (e.g., psychological adjustment) and physical consequences (e.g., immune response). Physical consequences is the only construct thought to affect health status (e.g., well, disabled, or terminal), indicating that if a spouse is diagnosed with a health concern, such as Rheumatoid Arthritis, his/her illness is the only variable that is impacting his/her health status. Continuing with the model at hand, health status is thought to directly affect both marital factors and support, but marital factors are not thought to directly affect health status. The model is presented as explaining how aspects of the marriage affect health, yet it indicates that health status directly impacts marital factors and not vice versa. This suggests that health could play a significant role in marital factors (e.g., satisfaction).

Building on Burman and Margolin's (1992) model, Kiecolt-Glaser and Newton (2001; see Figure 2) developed a model with many similar pathways, with a few notable exceptions. Instead of including stress and support as having a bidirectional relationship with marital factors, Kiecolt-Glaser and Newton proposed that stress and support are part of two larger constructs within the marriage: positive dimensions of marital functioning (e.g., healthy communication and attributes) and negative dimensions of marital functioning (e.g., negative communication behaviors, emotional states, and expectations). Another difference between the two models is that Kiecolt-Glaser and Newton did not include a separate construct for coping strategies in their model. Instead, they included coping strategies in a larger construct – individual differences—which also included personality traits and unique ways in which someone can deal with a

situation. This expanded construct of individual differences implies that people who exhibit certain personalities can cope in various ways and those differences impact positive and negative dimensions of marital quality, psychiatric symptoms, health habits, and biological systems. For example, certain personality characteristics (e.g., neuroticism) have been found to be significantly correlated to divorce (Karney & Bradbury, 1997; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

Both models have numerous strengths and have helped to move the field of health and marriage forward by inspiring new ideas and research. The first notable strength of both models is the differentiation of marriage into multiple components, each with potentially unique contributions to health and functioning. For example, research demonstrates that both support and stress within the marriage impact spouses' immune systems (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Wickrama, Lorenz, Conger, & Elder, 1997). The second benefit of these models is that health has also been differentiated into multiple components, rather than focusing solely on diagnoses of life threatening illnesses. In the majority of health and marriage literature, health status was viewed in terms of whether or not a spouse has been diagnosed with a serious illness, such as cancer, heart disease, fibromyalgia, or spinal cord injuries (Campbell, 1993; Fernandez, Reid, & Dziurawiec, 2006; Northouse, Mood, Templin, Mellon, & George, 2000; Soderberg et al., 2003). Instead, Burman and Margolin (1992) and Kiecolt-Glaser and Newton (2001) acknowledged the complex nature of health by breaking it down into multiple systems. For example, research demonstrates that negative marital interactions (e.g., conflict) can affect multiple levels of health such as immune functioning (Kiecolt-Glaser et al., 1993, 1997) and psychiatric symptoms (Beach, Fincham, & Katz, 1997). By differentiating between the multiple

aspects of physical health, these models provide a better understanding of the complex relationship that exists between marriage and health.

Despite the strengths of these models, there are some key limitations. Although both models are described as bidirectional, the pathways of influence from health to marriage are underdeveloped in comparison to the pathways of influence from marriage to health. For example, in both Kiecolt-Glaser and Newton's (2001) and Burman and Margolin's (1992) models, health status did not influence marital quality, either directly or indirectly, suggesting that being diagnosed with an illness would not influence marital quality. However, women who are struggling with Rheumatoid Arthritis report that when their disease activity is low and they are able to experience better health they have a stronger marriage compared to times when they are experiencing high levels of disease activity (Zautra et al.). Also, Prigerson, Maciejewski, and Rosenheck (2000) found that older adults who have better physical health have greater marital satisfaction, compared to older couples who struggle with health concerns. These healthier older couples tended to show more support within their marriage, compared to those who exhibited health concerns. When an individual is struggling with a health concern, it can be considered an enduring vulnerability that the individual is bringing to their relationship. According to the Vulnerability-Stress-Adaptation model (Karney & Bradbury, 1995), enduring vulnerabilities impact how couples interact, which directly affects their marital satisfaction and stability. Thus, although both models posit a reciprocal relationship between marriage and health, it is clear that these models do not fully account for these effects.

Another weakness of these models is that gender is only hypothesized to moderate certain pathways as opposed to all pathways of influence. For example, gender is specified as a moderator of the pathway between positive and negative dimensions of marriage and health

habits, yet is not indicated as a moderator for the pathway between functional status and marital relationship (Burman & Margolin, 1992; Kiecolt-Glaser & Newton, 2001). However, research shows that gender does moderate this relationship. For example, Kulik and Mahler (2006) found that wives who indicated high levels of marital satisfaction recovered from heart surgery significantly faster than wives who reported low levels of marital satisfaction. Husbands' recovery times from heart surgery, however, did not vary as a function of their marital satisfaction. Further, both models fail to consider how gender may directly impact marital quality or health status, despite research indicating key gender differences in both of these. For example, men have reported finding marriage more satisfying compared to women (Fowers, 1991). It is clear that men and women show differences in terms of their marital satisfaction, and these differences should be included when analyzing health status and marital satisfaction.

From extensive research and two well-respected models, it is clear that marriage and health are related. However, in light of the aforementioned limitations, more emphasis needs to be placed on the relationship between spouses' health and how it influences their marital satisfaction. Accordingly, the next section will briefly review the existing literature on how health affects marriage and what areas require further development.

Health Effects on Marriage

Before explaining how health affects marriage, it is important to acknowledge the selection argument, which suggests that the reason why married people are healthier is that healthier individuals are more likely to marry than unhealthier individuals (Lillard & Panis, 1996; Murphy et al., 2007; Rogers, 1996). However, this assumes that health only affects the likelihood of entering into a marriage, and disregards the effects of health in the later years of marriage, despite evidence that health continuously impacts the well-being of the marriage

(Goldman, Korenman, & Weinstein, 1995). Health can be defined in a multitude of ways. To fully understand how health affects the marriage health needs to be dissected, by looking at both subjective health and objective health.

First, studies have found that objective health— being diagnosed with an illness— affects marital satisfaction (Booth & Johnson, 1994; Karney & Bradbury, 1995; Soderberg et al., 2003). For example, research indicates that being diagnosed with an illness, such as cancer, affects a couple's marriage (Lichtman, Taylor, & Wood, 1987); this is due to spouses often reporting that their overall support and marital satisfaction decreases after diagnosis (Oberst & James, 1985). Given that marital satisfaction has a direct influence on marital stability (Karney & Bradbury), this implies that not only can health concerns affect how people feel about their marriage but they can also affect their decision of whether they should stay in the marriage. Research has found that health does affect a person's likelihood of divorce. For example, De Vivo, Hawkins, Richards, and Go (1995) found that individuals who suffered a spinal cord injury were more likely to divorce compared to people without spinal cord injuries. Although we know how some illnesses affect the marriage, we still do not know how normative health concerns and an individuals' overall objective health affect both spouses' marital satisfaction.

How someone perceives his/her health can affect his/her marriage, regardless if he/she has been diagnosed with an illness. Research shows that subjective health, an individual's perception of his/her health, is linked to his/her marital satisfaction (Waltz, Badura, Pfaff, & Schott, 1988). For example, in a sample of male cardiac patients, those who reported feeling better also reported lower levels of marital conflict. For husbands who reported not feeling well, marital conflict was greater and more marital issues were reported. From Burman and Margolin's (1992) model we know that marital interaction directly affects marital satisfaction; thus male

cardiac patients' physical health is theoretically impacting their marital satisfaction. It appears that husbands' subjective health likely has a significant impact on the marital satisfaction, however it should be noted that the researchers did not take into consideration that a patient's marital satisfaction could be impacting their recovery. Further, current research does not address how each spouses' health affects the other spouses' marital satisfaction. This may be of critical importance as women and men rate their health very differently (Idler & Benyamini, 1997), with very different implications for their well-being and therefore potentially their marriage (Deeg & Kriegsman, 2003).

Older men and women perceive their health differently and a third of older married adults are diagnosed with numerous health problems, such as arthritis, back problems, and foot or leg problems (Pienta et al., 2000). It seems that the health effects on marriage will be more pronounced in older adults. To determine how subjective and objective health affects marriage—in older adults—we need an appropriate population, which would be retired adults. To better understand this population the next section will provide a brief overview of the nature of health and marriage in older adulthood.

Health and Marriage in Older Adulthood

Health concerns increase with age, as illustrated by recent work from the nationally representative Health and Retirement Study (HRS) that found that half of middle-aged adults between the ages of 55 and 64 reported very good health, whereas only 25% of older adults (65+) reported having very good health (Hodes & Suzman, 2007). Further, 60% of middle-aged adults have been diagnosed with a health problem. This number increases to 82% for older adults, illustrating that an increasing number of people are being diagnosed as they age. For example, when looking at the most prevalent health concerns experienced by middle-aged and

older adults, 45% of 55-64 year olds are dealing with hypertension, and that number significantly rises to over 60% for those who are 75-84 years old. Arthritis has an even more dramatic shift with age, with half of those 55-64 years old having been diagnosed with arthritis in comparison to nearly 75% by the time a person is 75-84 years old. Clearly, as we age, our health starts to decline in measurable ways. Not surprisingly, being diagnosed with an illness, such as hypertension and arthritis, is related to how older adults rate their health (Pinquart, 2001). Although subjective and objective health are fairly interdependent, some research suggests that subjective health is less affected by objective health than previously believed (Pinquart, 2001).

On average all older adults seem to be dealing with more health concerns over time, but there is variance among them. As people age, gender differences emerge in their health concerns. Most notably, the average life expectancy for men and women is significantly different, with the average female in the United States living to 80.4 years, compared to the average man living to only 75.4 (Xu, Kockanek, Murphy, & Tejada-Vera, 2010). Given the link between objective health and mortality, it is clear that women appear to enjoy better health in older adulthood. However, the poorer health of men is also likely to impact women's health. For example, if a woman has to provide care for her husband's declining health, her own health is likely to suffer (Kiecolt-Glaser & Newton, 1987), highlighting the interdependent nature of spouses' health. Accordingly, since there are two people in a marriage and both are likely to have health concerns in older adulthood, we need to understand what that marriage looks like.

The majority of older couples are married and have been in their marriage for many years (Pienta et al., 2000). This is illustrated by work from the HRS showing that nearly 73% of older adults are married, with 69% of older men and 71% of older women still in their first marriage (Rauer, Zissimopoulos, & Karney, 2008). For individuals in their first marriage, these

relationships lasted on average 40 years. Even for older adults who had remarried, they had been in their marriage for a substantial amount of time as well, averaging between 15 and 20 years. The health of individuals who were currently married, whether in a first marriage or remarried, was much better than the health of those who were unmarried. This indicates that marriage is linked to health benefits (Dupre & Meadows, 2007). However, given the theories on marriage and health discussed before, marital status is only one piece of the picture. In order to understand why marriage might be beneficial, we need to understand what the qualities of these relationships are.

Longitudinal research indicates that marital satisfaction changes throughout the course of marriage and appears to decline over time (VanLaningham, Johnson, & Amato, 2000). Interestingly, at the same time that older adults are experiencing declines in their marital satisfaction, behaviorally they seem to be interacting more positively in problem solving interactions than middle aged adults (Levenson, Carstensen, & Gottman, 1993). Even though older adults are interacting more positively, they seem to be enjoying their marriage less over time. For older adults, this decrease in marital satisfaction is associated with health declines (Bookwala, 2005). Perhaps these health declines are related to negative spousal behavior, which has been linked to physical disability, chronic illnesses, physical symptoms, and self rated health (Bookwala). Regardless of these possible links, it appears that there are conflicting views about older adults' marital satisfaction. Despite this, because of the health characteristics shared by older adults it is clear that their marriages are unique in comparison to the marriages of younger adults. This may be due to the magnitude of health concerns that become normative in the older adult population.

Current Study

It is clear that even though we acknowledge a bidirectional relationship between marriage and health, there are limitations in the literature with regards to explaining how health affects marriage. As previously mentioned, the majority of the research on marriage and health primarily focuses on two pathways: how marriage affects health and how a specific disease affects marriage. What we do not understand is how marital satisfaction is affected by both spouses' normative health concerns and experiences. Therefore, what is needed is a study that examines how both spouses' subjective and objective health affects their own marital satisfaction and their spouse's marital satisfaction.

Accordingly, the current study has examined the question of how normative health concerns affect marital satisfaction in a sample of older adult couples. As illustrated in Figure 3, I hypothesized that not only were spouses' health going to be related, but their own physical health was going to affect their own marital satisfaction and their spouse's as well. In light of previous work that illustrates the important role that gender plays—and how women are particularly affected by a spouse's health (Kiecolt-Glaser et al. 1987) — I hypothesized that the effect of a partner's health on marital satisfaction will be stronger for wives than it will be for husbands. To ensure a conservative estimate of these effects, I have controlled for age and wealth. As mentioned early, with increasing age, research has demonstrated that both health and marital satisfaction decline (Booth & Edwards; Hodes & Suzman, 2007). Also, research indicates wealthier individuals tend to enjoy greater health and marital stability (Smith, 1998; Wilmoth & Koso, 2002).

Method

Participants

The study was conducted in the Southeastern region of the United States as part of the larger Marriage and Retirement Study (PI: Amy Rauer), which examined how positive aspects of marriage affect a couple's health and wellbeing in the retirement years. A total of 100 married couples will be recruited to participate in the study with 32 being used for the current study. Couples were recruited from local churches, fitness centers, and adult education classes. To be eligible for the study, the couple had to meet the following criteria: a) be married, b) consent to participation from both spouses, c) identify themselves as at least partially retired (e. g., working less than 40 hours a week), and d) be able and willing to drive to the site location. Of the couples in the study, 30 husbands (94%) and 29 wives (90%) were White, 2 husbands (6%) and 2 wives (6%) were African American, and 1 wife (3%) was Asian American. In terms of education for husbands, 2 husbands (6%) had a high school education, 1 had some college (3%), 10 had college degrees (34%), and 18 had post-college education (56%). In terms of education for wives, 3 wives (9%) had a high school education, 8 had some college (25%), 11 had college degrees (34%), and 10 had post-college education (31%). Over eighty percent of couples were in their first marriage and couples were married for an average of 42.81 years (SD= 14.50; range = 7-68). On average, husbands reported having 2.50 children (SD = 1.55; range = 0-6) and wives reported having 2.44 children (SD = 1.52; range = 0-6). Husbands had been retired for approximately 11.56 years (SD = 7.83; range = 0-36) and wives had been retired for 11.40 years

(SD = 10.61; range = 0-42). From these couples 6 wives (19%) and 5 husbands (16%) were currently employed part time. Couples' average annual income was $86,781.25 (SD = $81,056.23; range = $9,000-$500,000) and the average total wealth (e.g., 401K, income, and property) was $1,235,354 (SD = 1,693,356.11; range = $25,000- $8,500,000).

Measures

Several measures were used in the current study to assess the subjective health, objective health, and marital satisfaction of both spouses.

Marital satisfaction. The Marital Satisfaction Questionnaire for Older Persons (Haynes et al., 1992) measures domains of marital satisfaction that are appropriate for older adults. There are twenty four items that question couples on topics such as how couples handle disagreements, satisfaction with time spent with spouse, and their overall satisfaction with their marriage. Each question is rated on a 6 point scale (1 = very dissatisfied to 6 = very satisfied).

Subjective health. For subjective health, participants were asked "Overall would you describe your health as poor, fair, good, or excellent?" This measure of subjective health has been used frequently in the literature and has been found to have excellent validity (Okun & George, 1984; Hodes & Suzman, 2007). High scores on this measure indicated better health.

Objective health: Doctor-diagnosed diseases. To determine objective health, participants were asked if they have ever been diagnosed with the following common diseases/conditions: diabetes, cancer, arthritis, asthma, having a stroke, chronic lung disease, stomach problems/ulcers, leg problems, back problems, depression, and/or heart trouble. These items were given a score of 0 if the participant answers 'no' and a 1 if the participant answers 'yes', then the items were summed to assess objective health. This approach to assessing objective health has been widely used in the literature (Hodes & Suzman, 2007). Higher scores

indicated the older adult had a greater number of doctor-diagnosed diseases and thus poorer health.

Objective health: Degree of impairment.To better understand how these doctor-diagnosed diseases affected participants, we also asked "how does this diagnoses affect your day-to-day life?" This question was scored on a five point Likert scale, with higher scores indicating that the doctor-diagnosed diseases highly affected their day-to-day activities.

Controls. Participants were asked their age, and to give an estimate of their wealth, which includes all joint investments (e.g., IRA, pension plans, and 410K) and property.

Plan of Analysis

First, I examined the descriptive statistics for all of the study variables (i.e., mean, standard deviation, range, skewness). By examining these statistics, I was able to have a better understanding of the characteristics of my unique sample.

Second, to test the theoretical model proposed in Figure 3, I tested an actor-partner interdependence model (Campbell & Kashy, 2002). As can be seen in the hypothesized model shown in Figure 4, the actor effects examined how a spouse's physical health predicted his/her own marital satisfaction. Partner effects examined how one spouse's marital satisfaction was influenced by the other spouse's physical health. The benefits of this methodological approach was that it took into account the fact that husbands' and wives' data are interdependent (Cook & Kenny, 2005), and it allowed me to estimate more than one equation at the same time and determine if a relationship existed between variables in opposing equations. Thus, actor effects were estimated while controlling for partner effects and vice versa. Using this method I was able to test if husbands and wives had equal partner effects, which allowed me to answer the question of which spouse's physical health has more of an influence on the other spouse's marital

satisfaction. To evaluate the overall fit of this model, I evaluated several indices of goodness-of-fit (chi-square, CFI, TLI, and RMSEA).

Results

Preliminary Analysis

Descriptive statistics for husbands' and wives' marital satisfaction, subjective and objective health, and degree of impairment were presented in Table 1. The means, standard deviations, ranges, and skewness were examined for all variables. Since gender differences were expected for the variables of interest, paired *t* -tests were also run. Both wives and husbands were highly satisfied with their marriage (M = 98.09 and 98.65 respectively on a scale ranging from 24 to 139), and paired *t*-tests revealed no gender differences. Husbands and wives rated their physical health similarly to each other, as both felt relatively good and each had a similar number of doctor-diagnosed diseases (approximately 2). Further, both spouses felt that their doctor-diagnosed diseases only slightly interfered with their usual activities.

Correlational analyses were conducted with the variables of interest, as well as with the controls (age and wealth) (see Table 2). First, the number of husbands' doctor-diagnosed diseases were marginally significantly negatively correlated with their own subjective health (r = -.32, $p \leq .10$), suggesting that on average, the fewer doctor-diagnosed diseases husbands had the better they rated their physical health. Husbands' degree of impairment was significantly negatively correlated with their own subjective health (r = -.42, $p \leq .05$), meaning that the more husbands' diseases interfered with their daily activities, the lower they rated their physical health. Husbands' degree of impairment was also significantly positively correlated with their own number of doctor-diagnosed diseases (r = .40, $p \leq .05$), meaning that the more doctor-diagnosed diseases husbands had, the more those diseases interfered with their usual activities.

The number of wives' doctor-diagnosed diseases were significantly negatively correlated with their own subjective health (r = -.42, $p \leq .05$), meaning that the more doctor-diagnosed diseases wives had, the worse they rated their physical health. The number of wives' doctor-diagnosed diseases were also marginally significantly negatively correlated with their own marital satisfaction (r = -.35, $p \leq .10$), suggesting that on average, the more doctor-diagnosed diseases wives had the lower their marital satisfaction was. Wives' degree of impairment was significantly positively correlated with their own doctor-diagnosed diseases (r = .53, $p \leq .01$), meaning that the more doctor-diagnosed diseases wives had, the more those diseases interfered with their usual activities.

Finally, there was only minimal evidence of cross-spouse correlations. Specifically, husbands' marital satisfaction was found to be significantly positively correlated with wives' marital satisfaction (r = .62, $p \leq .01$), meaning that when husbands were highly satisfied with their marriage so too were their wives.

Looking next at the controls, husbands' age was significantly positively correlated with wives' age (r = .92, $p \leq .01$), meaning that husbands who were older were married to wives who were older. Husbands' age was also found to be marginally significantly negatively correlated with their own marital satisfaction (r = -.32, $p \leq .10$), suggesting that on average, when husbands were older they were less satisfied with their marriage. Husbands' marital satisfaction was found to significantly negatively correlated to wealth (r = -.73, $p \leq .01$), meaning that when husbands were highly satisfied with their marriage they had less money. Surprisingly, we did not find evidence for a significant relationship between wealth and any of the health variables (husbands' or wives' subjective or objective health).

Multivariate Statistics

To test my hypotheses, I utilized an actor-partner interdependence model (Campbell & Kashy, 2002). The hypothesized actor-partner model was fit with both spouses' objective health (degree of impairment and number of doctor-diagnosed diseases) and subjective health (self-rating of physical health) predicting their own and their spouses' marital satisfaction, controlling for age and wealth (see Figure 5). First, multiple indices of model fit were examined. Each index of model fit has specific requirements that have to be met before being interpreted. To be able to interpret the model at least three of these criteria needed to be acceptable. Acceptable criteria was defined as the χ^2 being nonsigificant, χ^2/df ratio being between 1 and 3 (Arbuckle & Wothke, 1999), the Comparative Fit Index (CFI) being above .90, the Root Mean Square Error of Approximation (RMSEA) being below .08 (Browne & Cudek, 1993), and the Standardized Root Mean Square Residual (SRMR) being below .05 (Garson, 2011). Based on these criteria, the model had an acceptable fit: $\chi^2 = 5.97$, $p = .54$, $\chi^2/df = .85$, CFI = 1.00, RMSEA = .00, SRMR = .05.

Two significant actor effects were found in the final model (see Figure 4). First, the more doctor-diagnosed diseases wives had, the lower their marital satisfaction was, $\beta = -.31$, $p \leq .10$. Second, the higher husbands rated their physical health, the higher their own marital satisfaction was, $\beta = .34$, $p \leq .05$. These results partially supported the hypothesis that spouses' own physical health significantly affected their own marital satisfaction, as two of the six potential actor effects were significant.

Two significant partner effects were also found in the final model (see Figure 4). The higher wives rated their physical health, the higher their husbands' marital satisfaction was, $\beta = .27$, $p \leq .10$. Similarly, the higher husbands rated their physical health, the higher their wives'

marital satisfaction was, $\beta = .35$, $p < .05$. These results helped to partially support the hypothesis that spouses' health significantly affected their spouses' marital satisfaction, as again, two of the six potential partner effects were found to be significant.

In addition to the actor and partner effects, there were numerous significant within-spouse correlations found between the health variables for husbands and wives. How wives rated their physical health was also found to be significantly negatively correlated with their number of doctor-diagnosed diseases ($\beta = -.43$, $r = .15$, $p \leq .05$), meaning that the fewer doctor-diagnosed diseases wives had, the better they rated their physical health. Finally, wives' number of doctor-diagnosed diseases was found to be significantly positively correlated with their own degree of impairment ($\beta = .57$, $p \leq .05$), meaning that the more doctor-diagnosed diseases wives had, the more those diseases impacted their day-to-day activities.

A similar story emerged for husbands' health correlations. How husbands rated their physical health was also found to be significantly negatively correlated with their number of doctor-diagnosed diseases ($\beta = -.39$, $r = .16$, $p \leq .05$), meaning that the fewer doctor-diagnosed diseases husbands had, the better they rated their physical health. Finally, how husbands rated their physical health was found to be significantly negatively correlated with their own degree of impairment ($\beta = -.26$, $r = .19$, $p < .10$), meaning that the less they felt like their diseases impacted their day-to-day activities, the higher husbands rated their own physical health. Though within-spouse health indices were correlated as hypothesized, I found no evidence of correlations between husbands' and wives' health indices.

Lastly, I hypothesized that the effect of partners' health on marital satisfaction would be stronger for wives than it would be for husbands. To test if this was the case, model were nested within each other, and paths representing these effects were constrained to be equal. By

constraining the pathways to be equal whether or not there is a reduction in model fit can be seen, which illustrates that one pathway is significantly different from the other pathway. Delta-chi squared tests showed that half the associations between wives' health indices and husbands' marital satisfaction were not significantly different from the associations between husbands' health indices and wives' marital satisfaction and half were significantly different. Specifically, the association between wives' subjective health and husbands' marital satisfaction was significantly different from the association between husbands' subjective health and wives' marital satisfaction $\Delta \chi^2(5) = .8.05$, $p = .10$. The association between wives' doctor diagnosed diseases and husbands' marital satisfaction was not significantly different from the association between husbands' doctor diagnosed diseases and wives' marital satisfaction $\Delta \chi^2(3) = .66$, $p = .90$. Finally, the association between wives' degree of impairment and husbands' marital satisfaction was not significantly different from the association between husbands' degree of impairment and wives' marital satisfaction $\Delta \chi^2(7) = 2.09$, $p = .95$.

To further explore potential gender differences in these associations, delta-chi squared tests were conducted to examine whether the strength of actor effects was different for husbands and wives. These analyses showed that some of the associations between wives' health indices and wives' marital satisfaction were significantly different from the associations between husbands' health indices and husbands' marital satisfaction. Specifically, the association between wives' subjective health and wives' marital satisfaction was significantly different from the association between husbands' subjective health and husbands' marital satisfaction $\Delta \chi^2(3) = 11.15$, $p = .05$. The association between wives' doctor diagnosed diseases and wives' marital satisfaction was also significantly different from the association between husbands' doctor diagnosed diseases and husbands' marital satisfaction $\Delta \chi^2(3) = 3.45$, $p = .10$. Finally, the

association between wives' degree of impairment and wives' marital satisfaction was not significantly different from the association between husbands' degree of impairment and husbands' marital satisfaction $\Delta \chi^2(5) = 1.89$, $p = .95$.

Discussion

Although we know that health influences an individual's likelihood of entering into marriage (Lillard & Panis, 1996; Murphy et al., 2007; Rogers, 1996) and that health declines as people age (Hodes & Suzman, 2007), we do not fully understand the relationship between older adults' health and their marriage. To begin to address this critical gap in the literature, the current study explored the relationship between objective and subjective health and marital satisfaction in a sample of 32 older couples and found spouses' health was linked to both their own marital satisfaction and their partners' marital satisfaction.

The Links between Health and Marriage

According to current theories on marriage and health, functional status is thought to only directly affect marital functioning, not marital quality or marital interaction (Burman & Margolin, 1992; Kiecolt-Glaser & Newton, 2001). However, the current study found that functional status was linked to marital quality. This relationship might have been found because functional status could be linked to marital interaction, which in turn is linked to marital quality. This seemingly influential pathway was not included by Kiecolt-Glaser & Newton, but from the current study it appears to be needed. To understand the quality/level of satisfaction in a marriage it looks as if we would need to understand how the couple interacts. The interactions that exist between couples could influence how they view the quality of their marriage. Future research is needed to specifically test the hypothesis that functional status is directly linked to marital interaction.

Though the pathway from functional status to marital interaction was not tested here, evidence was found linking functional status, defined here as spouses' objective and subjective health, to marital satisfaction. For husbands, how they felt about their health was related to their own marital satisfaction. For wives, doctor-diagnosed diseases seemed to play a role in their own level of marital satisfaction. One explanation for these results might be found by looking at the repercussions of being diagnosed with, or feeling poorly about, their health. When spouses experience a decrease in their health, it has been found to decrease their participation in marital activities, such as visiting friends and shopping (Booth & Johnson, 1994). If the suggested added pathway from functional status to marital interaction in Kiecolt-Glaser & Newton's (2001) model is accurate, how a partner was functioning with his/her health thus could be linked to marital satisfaction through its association with participation in fewer marital strengthening events. Specifically, as shared activities between spouses have been found to be associated with spouses feeling more attached to each other (Hill, 1988), it may be that no longer participating in shared activities might lead to individuals becoming less attached to their spouse. This pathway might help explain why an increase in health concerns would be associated with lowered marital satisfaction.

Beyond health being linked to a spouses' own marital satisfaction, there were also relationships found between spouses' health and their partners' marital satisfaction. How spouses feel about their health is linked to the marital satisfaction of their partner (Waltz et al., 1988). In a longitudinal study of couples, Yorgason, Booth, and Johnson (2008) found that when husbands had poor health, wives had a decrease in marital satisfaction. The current study found similar results: more reported health concerns by one spouse were associated with lower marital satisfaction of his/her partner. This has implications for older adults because it is normative for

them to be dealing with health concerns. To gain understanding of how we can help couples deal with these normative health concerns, we first need to know specifically what type of health (subjective or objective) is linked to their partners' marital satisfaction. What was found to be linked to partner's marital satisfaction was how each spouse felt (subjective health) about his/her own health. If a husband felt healthier, then his wife was more satisfied with the marriage. Similarly, wives who felt healthier had husbands who were more satisfied with the marriage.

These findings could be explained by roles and expectations changing as spouses get older and start to view their health differently. When wives are diagnosed with diseases, their husbands likely have more opportunities for caregiving (Ribeiro, Paul, & Nogueira, 2007). If husbands are not able to meet their wives' expectations for caregiving, it could to lead to both disappointment and disillusionment on the wives' part, which have been linked to lower marital satisfaction (Carrere, Buehlman, Gottman, Coan, & Ruckstahl, 2000). As for husbands, turning to a well-documented area of research could help answer why husbands' subjective health is linked to their own marital satisfaction. The literature on work-family spill over indicates that work stress negatively affects family relationships (Allen, Herst, Bruck, & Sutton 2000). However, retired husbands no longer have work to stress over. Stress in retirement could instead come from the increasing health concerns that husbands have to deal with. Watson and Pennebaker's (1989) disability hypothesis states that health concerns cause stress through discomfort and by interfering with day-to-day activities. If husbands are uncomfortable with their health concerns and are no longer able to enjoy some of their day-to-day activities, it could increase their stress level. Therefore, if husbands are stressed about their health, it could be similar to what they once felt at work, which as stated above, was found to spill over into their marital interactions and thus negatively affect their relationship. These results show that

husbands' and wives' health are linked to their own marital satisfaction and the marital satisfaction of their partner. We next examine why husbands and wives did not differ in these links.

Gender Differences

We know that as men and women become older they have to deal with an increasing number of health concerns (Hodes & Suzman, 2007), and that they have to deal with those on slightly different levels. For example, Hodes and Suzman, (2007) found that, for older adults (75-84 years old), nearly thirty percent of women have at least one disability which limits their daily living, and only about eighteen percent of men have at least one disability which limits their daily living. Also, a significant difference between the health of men and women is in their life expectancy, as women live about five years longer than men (Xu et al., 2010). Further, there are also differences in marital satisfaction, on average husbands are more satisfied with their marriage compared to wives (Fowers, 1991). Even the relationship between marriage and health seems to be different among wives and husbands. For example, in long term marriages, the correlation between marital distress and health was significantly stronger for wives than it was for husbands (Levenson et al., 1993). This shows that after a couple has been together for many years, if there are marital issues, it affects the wives' health more so than it affects the husbands' health. The current study did find gender difference between marriage and health. However, we did not find gender differences in all of the pathways between health and marital satisfaction. The pathways in which gender differences were found were between spouses' objective health and their own marital satisfaction, spouses' subjective health and their own marital satisfaction, and spouses' subjective health and their partners' marital satisfaction.

The current study did expect to find more gender differences, a closer look at the sample studied might explain why gender differences were not found. One possible explanation for the lack of gender differences is that the sample studied was highly satisfied with their marriage, for older adults. Levenson and colleges (1993) found no differences in older couples' health if they were highly satisfied with their marriage. For those older couples in unsatisfied marriages, however, wives had significantly more physical health problems than husbands. These highly satisfied couples could have the possibility of enjoying better health and therefore have the potential to share more activities together compared to couples who have more health problems, which could positively affect both spouses' marital satisfaction.

Another potential explanation for the lack of these gender differences was that the current sample focused on older adults, who tend to have more androgynous traits. Sinnott (1982) found that older adults (greater than 60) identify with taking on androgynous roles more so than younger adults (college students). Identifying with being more androgynous may be linked to spouses becoming older and feeling more comfortable with dividing labor more equally around the home (Szinovacz, 2000). Dividing housework more equally between spouses could create several positive outcomes such as couples being able to participate in more quality time together and marital satisfaction being higher (Suitor, 1991). So it may be the case that in an older sample, we may not see gender differences because of age and roles being more flexible as spouses become older. Future studies should take into consideration including a diverse sample in terms of both marital satisfaction and age, so we can begin to explore how these variables might explain gender differences or the lack thereof in the relationship between health and marital satisfaction.

Limitations

The current study built upon two strong theoretical models to examine the links between spouses' health and their marital satisfaction. However, there are limitations within the study and the results should be interpreted with caution. First, data used in the current study was gathered at a single time point. To have a better understanding of the relationship between normative health concerns and marital satisfaction in older adults, longitudinal data should be used. Longitudinal data would allow researchers to see how health and marital satisfaction are related over time. By tracking the relationship between health and marriage over time we would be able to see how an increasing number of health concerns might affect the marital satisfaction of both spouses.

Secondly, the majority of the rather small sample was Caucasian, highly educated, and financially well-off. Larger, more representative samples are needed to explore these associations further. For example, as African Americans tend to have higher rates of diseases (Hodes & Suzman, 2007), a more racially diverse sample might reveal additional significant pathways between objective health and marital satisfaction. A similar story might occur for people who have lower socioeconomic status, who also tend to have more health concerns compared to those who have higher socioeconomic status (Kennedy, Paeratakul, Ryan, & Bray, 2007). Since different populations deal with more health concerns, future studies should include a more diverse sample to see if having more health concerns leads to greater number of pathways being significant in the current study's model.

Conclusion

Spouses reap many benefits from marriage, from being healthier to recovering better from illnesses (Chun & Lee, 2001; Goodwin, 1987; Kiecolt-Glaser & Newton, 2001; Ross, Mirowsky, & Goldsteen, 1990). The majority of the research explaining why married people are healthier has assumed marriage contributes to health and, for the most part, overlooked how health contributes to marriage. The current study found that both spouses' health was associated with their own marital satisfaction and their partners' marital satisfaction. These results may be specifically related to the sample studied, older adults, because health seems to be a major concern in later life and was found to be linked to both spouses' marital satisfaction. These results have the potential to help explain VanLaningham, Johnson, and Amato's (2000) findings of a decrease in marital satisfaction across marriage. Health continues to decrease as people age, and from the current study's results it seems that more health concerns are associated with lower marital satisfaction. Future studies could help shed light on this area by examining exactly how health affects marital satisfaction and how couples could deal with their increasing health concerns in a positive fashion. In the rapidly aging society that is upon us (Olshansky, Goldman, Zheng, & Rowe, 2009), we need to pay attention to these results. These findings could be affecting the growing number of older couples. If older couples knew how to deal with the stress that comes along with their health, it could possibly help to stem the decline in marital satisfaction that has been found to characterize long-term marriages.

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Table 1.

Mean Scores and Gender Differences for Marital Satisfaction and Health (N = 62)

	Wives				Husbands			
Variables	*M*	*SD*	Range	α	*M*	*SD*	Range	α
Marital satisfaction	98.09	13.56	64-117	.93	98.65	12.00	71-114	.93
Health								
Subjective health	3.16	.52	2-4		3.25	.67	1 – 4	
Objective health								
Number of diseases	2.71	1.81	0-8		2.71	1.66	0-6	
Degree of impairment	2.11	1.17	1-5.00		2.23	1.04	1-4.40	

Table 2.

Correlations for Wives' and Husbands' Marital Satisfaction and Health (N = 62)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Wives' age	–										
2. Husbands' age	.92**	–									
3. Wealth	.19	.26	–								
4. Wives' marital satisfaction	-.01	-.11	-.30	–							
5. Husbands' marital satisfaction	-.24	-.32†	-.73**	.62**	–						
6. Wives' subjective health	-.13	-.19	.24	.11	.13	–					
7. Husbands' subjective health	-.02	-.12	-.02	.25	.18	-.03	–				
8. Wives' diagnosed diseases	.11	.03	.02	-.35†	-.22	-.42*	.14	–			
9. Husbands' diagnosed diseases	.17	.17	-.16	.09	.18	.07	-.32†	-.23	–		
10. Wives' degree of impairment	.18	.16	-.13	-.05	-.06	-.23	-.08	.53**	.18	–	
11. Husbands' degree of impairment	-.09	.02	-.01	-.01	.12	-.09	-.42*	-.17	.40*	-.32	–

† $p < .10$ *$p < .05$. **$p < .01$.

Figure 1.
Burman and Margolin's (1992) model.

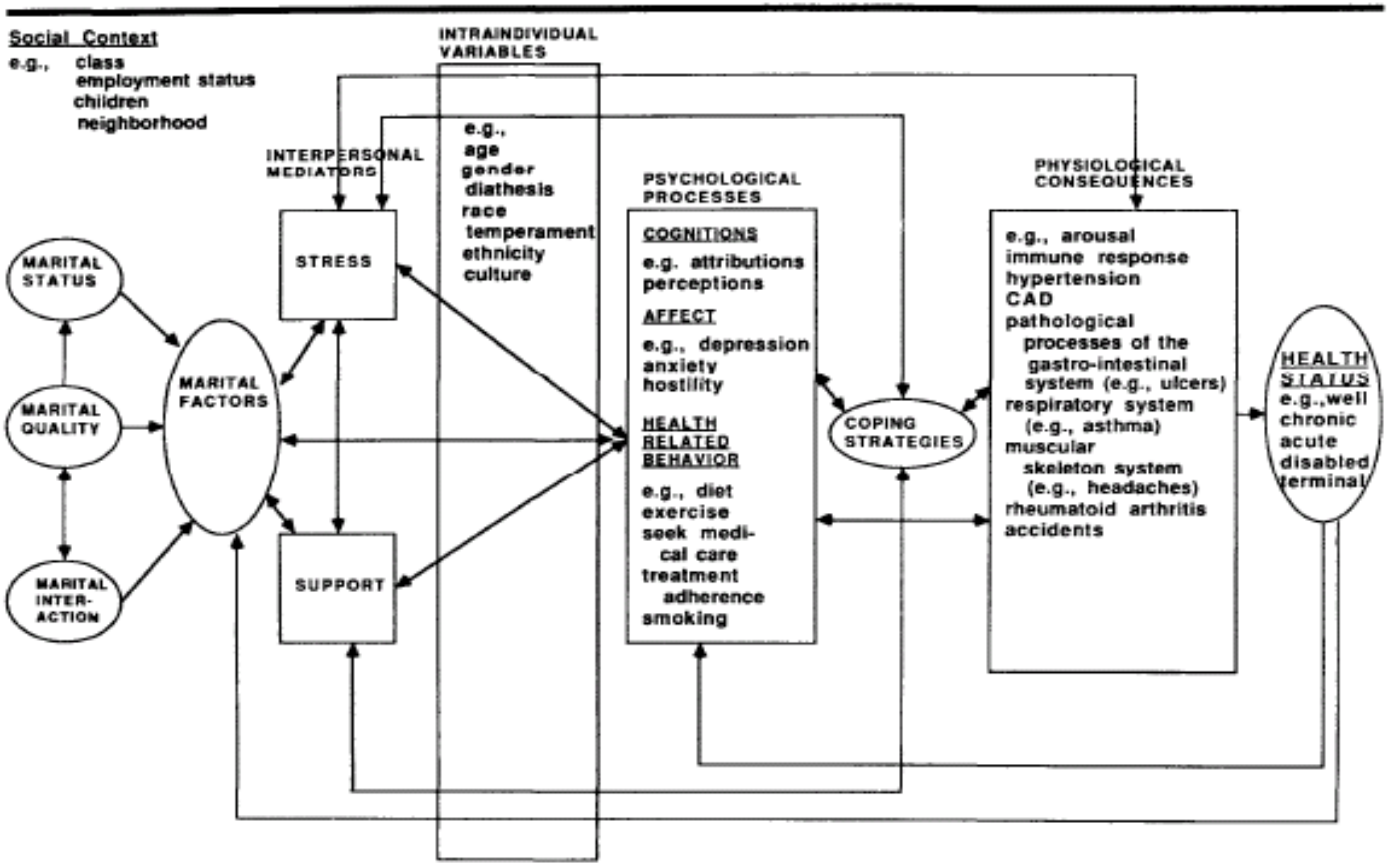

Figure 2.
Kiecolt-Glaser & Newton's, (2001) model.

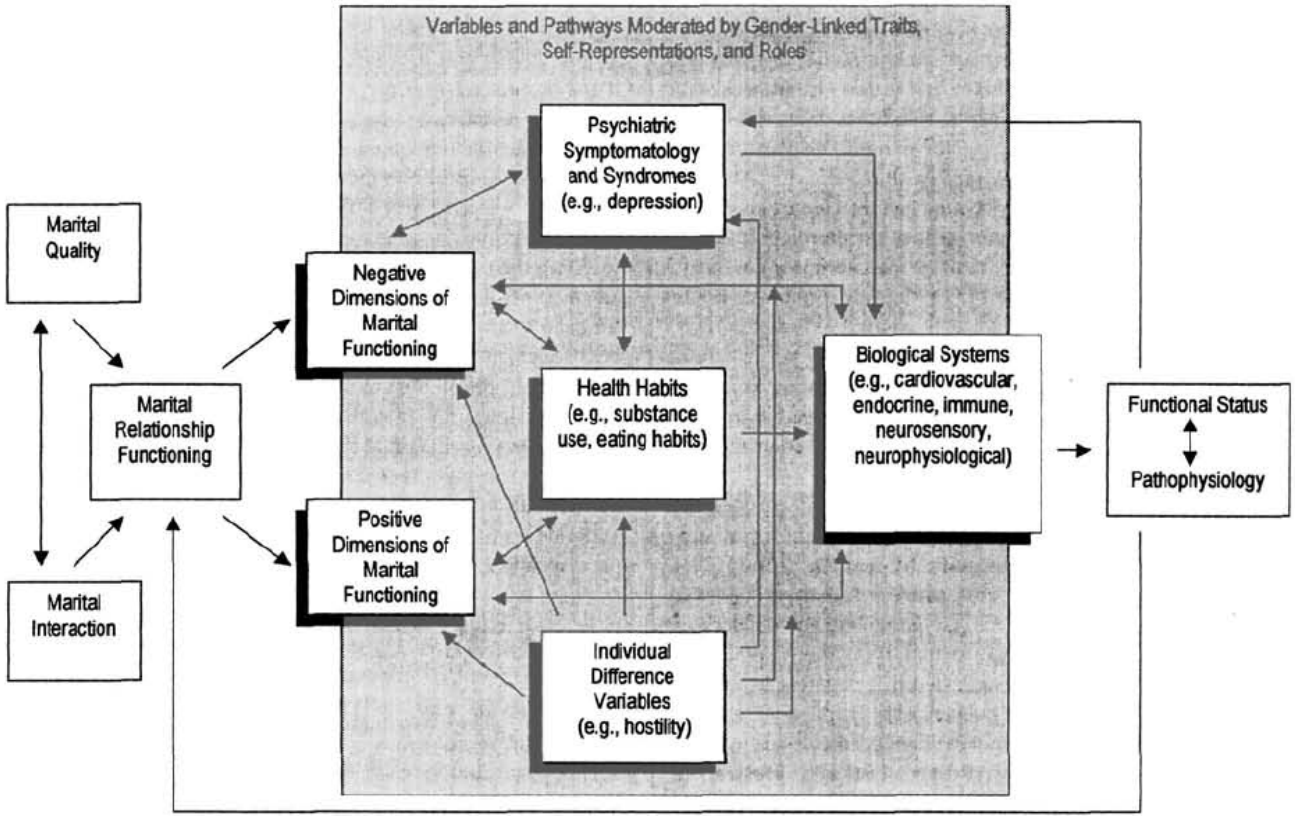

Figure 3.

Theoretical model to represent how physical health affects marital satisfaction.

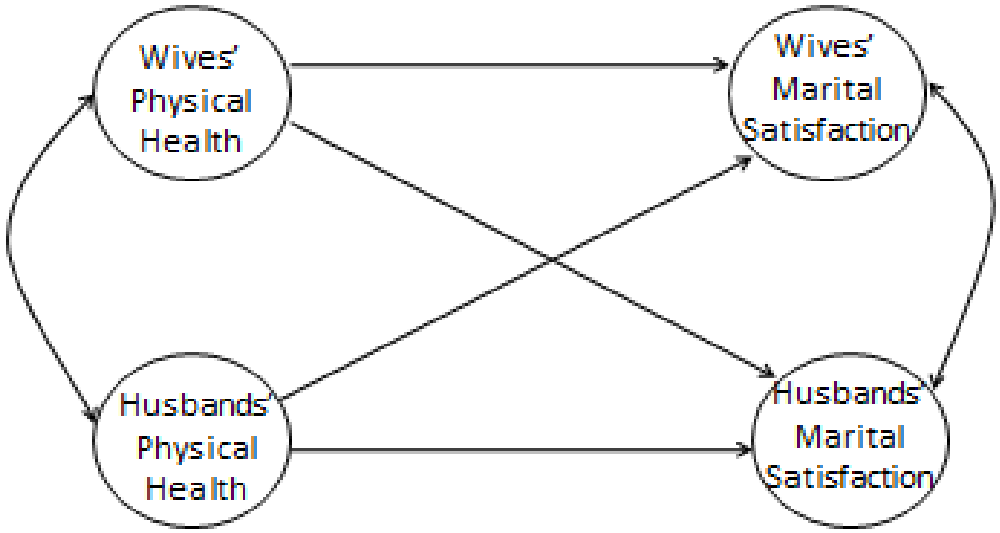

Figure 4.

Hypothesized model that represents how the physical health of each spouse affects both their own and their spouse's marital satisfaction.

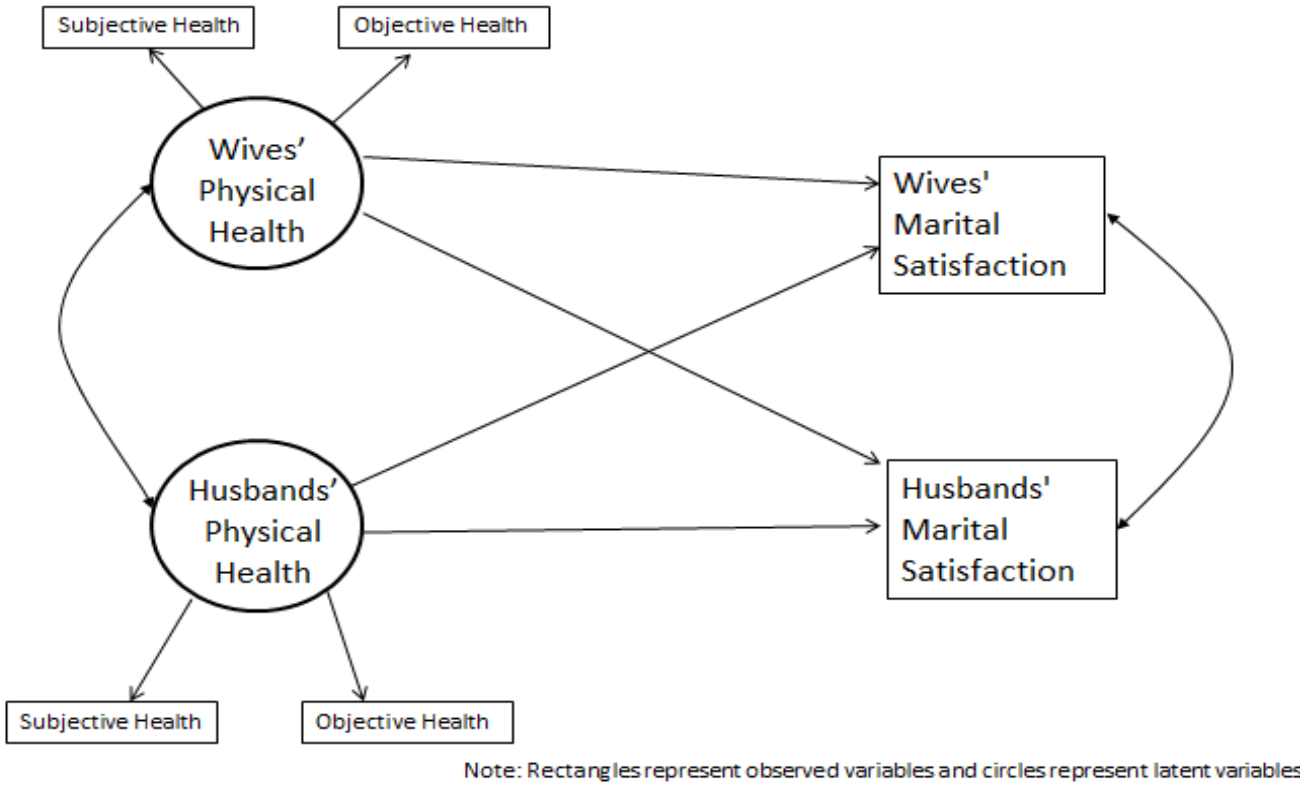

Figure 5.

Tested model for how spouses health affects their own marital satisfaction and their partners' marital satisfaction. Controlling for age and wealth. *(N=64)*

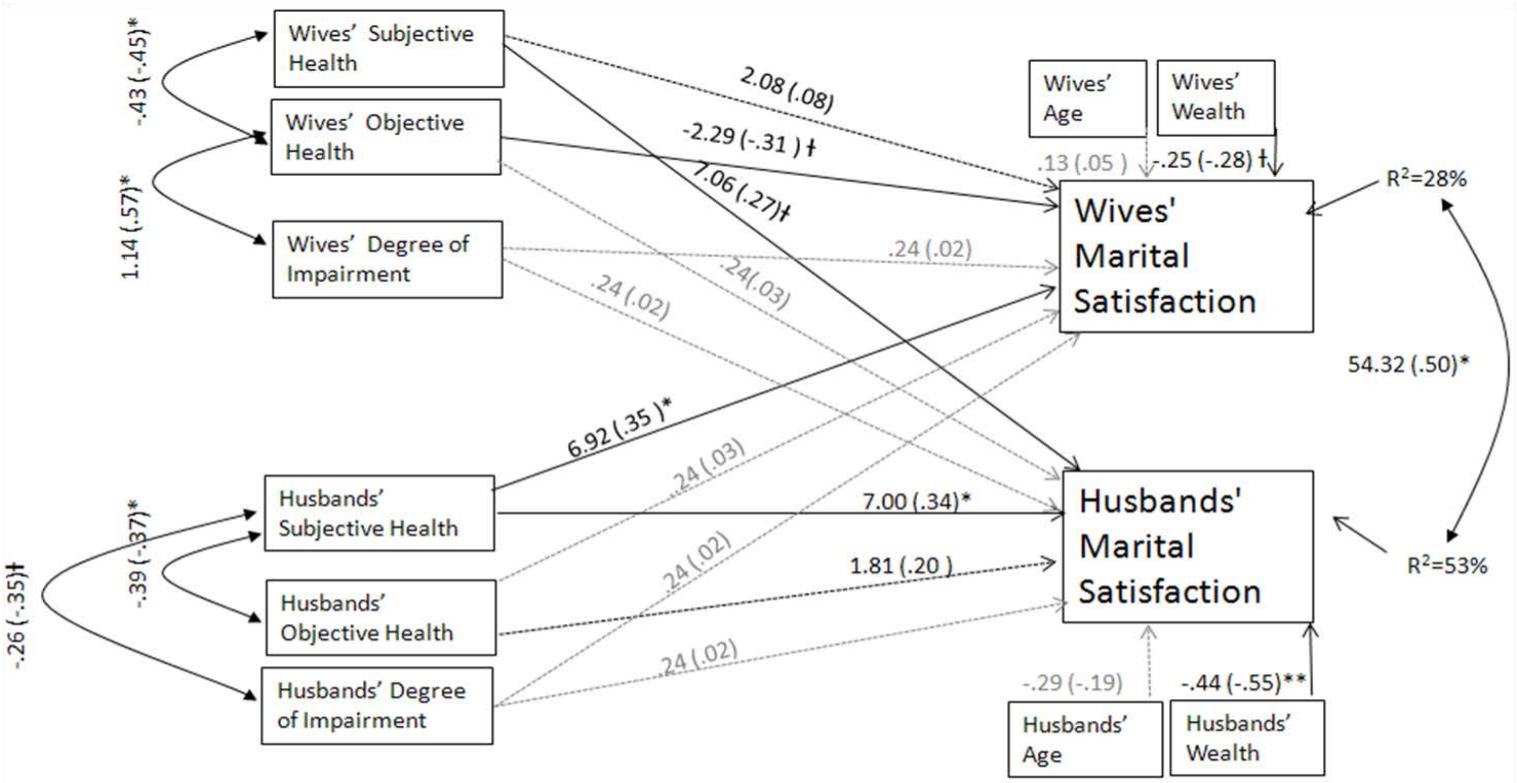

Figure 5. Model of an actor-partner interdependence model illustrating the affect of wives' and husbands' health on their marital satisfaction and their spouses' marital satisfaction, controlling for wealth and age. All reported coefficients were standardized, and significant pathways were illustrated by a solid black line and the non significant pathways were represented by a dashed line. Observed health variables between spouses were allowed to correlate, and none were significant. To have a cleaner model these correlations were not shown, but can be requested from the author. $\chi 2/df = 1.94$. CFI= .88, RMSEA= .18, and the SRMR =.02.
Note: † $p < .10$, * $p < .05$, ** $p < .01$, ** $p < .001$.

Appendix

Marital Satisfaction for Older Persons Questionnaire

1	2	3	4	5	6
Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Satisfied	Very satisfied

1. The amount of time my spouse and I spend in shared recreational activities.	1	2	3	4	5	6
2. The degree to which my spouse and I share common interests.	1	2	3	4	5	6
3. The day-to-day support and encouragement provided by my spouse.	1	2	3	4	5	6
4. My spouse's physical health.	1	2	3	4	5	6
5. The degree to which my spouse motivates me.	1	2	3	4	5	6
6. My spouse's overall personality.	1	2	3	4	5	6
7. The amount of consideration shown by my spouse.	1	2	3	4	5	6
8. The manner in which affection is expressed between my spouse and me.	1	2	3	4	5	6
9. How my spouse reacts when I share feelings.	1	2	3	4	5	6
10. The way disagreements are settled.	1	2	3	4	5	6
11. The number of disagreements between my spouse and me.	1	2	3	4	5	6
12. My spouse's philosophy of life.	1	2	3	4	5	6

13. My spouse's values.	1	2	3	4	5	6
14. My spouse's emotional health.	1	2	3	4	5	6
15. The frequency of sexual or other physically intimate relationships with my spouse.	1	2	3	4	5	6
16. The quality of sexual or other physically intimate relations with my spouse.	1	2	3	4	5	6
17. The frequency with which my spouse and I have pleasant conversations.	1	2	3	4	5	6
18. My overall compatibility with my spouse.	1	2	3	4	5	6
19. How decisions are made in my marriage.	1	2	3	4	5	6
20. How well my spouse listens to me.	1	2	3	4	5	6

21. Of all the attention you receive from your spouse, what percent is pleasant or positive?	1 0-25%	2 26-50%	3 51-75%	4 76-100%

22.Overall, how satisfied are you with your marriage right now	1 Very dissatisfied	2 Much less satisfied	3 Less satisfied	4 Satisfied	5 More satisfied	6 Very satisfied

23. In the past year, how often have you had significant problems in your marriage?	1 Very often	2 Often	3 Seldom	4 Never	
24. Compared to five years ago, how satisfied are you with your marriage?	1 much less	2 less	3 equally	4 more	5 much more