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The Role of Marital Quality in Physical Health During the Mature Years

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Objective: This study examined the role of marital quality in the physical health of mature adults. **Method:** Participants were from the National Survey of Midlife Development in the United States aged 50+ years who were in their first marriage. Five dimensions of marital quality and four indicators of physical health were used. **Results:** Regression analyses indicated that marital quality indices accounted for a significant amount of explained variance in physical health. Most notably, higher levels of negative spousal behaviors uniquely contributed to physical health, predicting more physical symptoms, chronic health problems, and physical disability, and poorer perceived health. **Discussion:** The occurrence of negative spousal behaviors was consistently associated with poorer physical health. The negativity effect observed regarding the costs and benefits of social support in general also applies to the context of marriage in that negative spousal behaviors outweigh positive spousal behaviors in contributing to mature adults' physical health.

Keywords: *marriage; health; middle-aged and older adults*

In recent years, researchers have paid much attention to the role of marital quality in physical health. These studies generally have shown that positive marital processes (e.g., marital satisfaction, marital happiness) are beneficial to physical health, whereas negative marital processes (e.g., marital conflict) can have a detrimental impact on physical health (see Kiecolt-Glaser & Newton, 2001). The vast majority of

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these studies, however, have examined the relationship of marital quality to physical health in younger rather than older individuals. For example, in Kiecolt-Glaser and Newton's (2001) extensive review of the literature, most of the studies on marital quality and health had samples with mean ages in the late 30s and early 40s (e.g., Baker et al., 1999; Barnett, Davidson, & Marshall, 1991; Carels, Sherwood, & Blumenthal, 1998; Fisher, Nakell, Terry, & Ransom, 1992; Ganong & Coleman, 1991; Goodwin, 1997; Wickrama, Lorenz, & Conger, 1997). Exceptions to this trend were seen in studies that focused on couples coping with a chronic illness in one spouse (e.g., Roth-Roemer & Kurpius, 1996; Sullivan, Katon, Russo, Dobie, & Sakai, 1994; Vitaliano, Young, Russo, Romano, & Magana-Amato, 1993). In these cases, the mean sample age tended to be higher (mean age 51, 62, and 71 years, respectively). However, marital quality is likely to be an important resource for mature adults' physical health, in general, even among those who are not experiencing a chronic stressor, such as providing care to an ailing spouse. This study examined the links between marital quality and physical well-being among a probability-based sample of individuals who are middle-aged and older.

The vast majority of studies that have examined the role of marriage in physical health during the mature adulthood years have focused on marital status (rather than marital quality) as the predictor variable. To be sure, these studies have repeatedly documented that being married makes significant positive contributions to health in the second half of life. Pienta, Hayward, and Jenkins (2000) found that being married during the retirement years has a wide array of health benefits (in terms of the prevalence of fatal and nonfatal chronic diseases, functional levels, and disability). In a large study of long-term illness rates in Great Britain, Murphy, Glaser, and Grundy (1997) found that until about the age of 70, long-term illness rates are lowest among individuals in first marriages compared with all other marital status categories (widowed, remarried, divorced, and single). Likewise, Prigerson, Maciejewski, and Rosenheck (2000) found that married individuals aged 50 years and older reported fewer chronic illnesses, better functional health, fewer nursing home days, and fewer physician visits than widowed individuals in the same age group.

As is amply evident from Kiecolt-Glaser and Newton's (2001) review of the literature, however, it is simplistic to assume that the

presence of a spouse in and of itself can protect individuals' physical health. This is likely to be as true of the mature years (age 50 years and beyond) as it is of the younger years. After all, a close marital relationship can be viewed as a significant interpersonal resource across the adult life span, representing potentially the most intimate type of emotional support throughout the adulthood years (Anderson & McCulloch, 1993). Thus, the nature of the marital relationship over and above marital status can be expected to contribute significantly to physical health in mature adults. Evidence already exists indicating that marital happiness is especially important to mature adults' mental health (e.g., Bookwala & Jacobs, 2004). This article explores the extent to which the quality of the marital relationship contributes to the physical health of mature adults.

A small minority of studies linking marital quality to physical health in mature samples have yielded findings that have been generally consistent with those found with younger groups. For example, Levenson, Carstensen, and Gottman (1993), who used young and old adults in their study, found that in both age groups, satisfied husbands and wives did not differ on reports of health problems, but dissatisfied wives reported more health problems than their male counterparts. Prigerson et al. (2000) found that harmonious marriages of mature adults were linked with lower health care costs than marriages characterized by discord. In an earlier study, Prigerson, Maciejewski, and Rosenheck (1999) found that married women in more satisfied marriages reported better sleep and fewer physician visits than women in less satisfied marriages. Roth-Roemer and Kurpius (1996) likewise found that women diagnosed with rheumatoid arthritis that were happily married reported better health than women who were unhappily married. Finally, Farrell and Markides (1985) reported that higher marital satisfaction was associated with better physical health in middle-aged (and younger) Mexican American married men and women.

Although these early studies have been among the first to highlight the potentially important links between marital quality and physical health in mature adults, they are limited in some important ways. First, most of these studies have treated marital quality as a unidimensional construct, failing to assess multiple facets of marital quality. However, researchers in the area of marriage have described the construct of marital quality to be more complex. Fincham and Linfield (1997)

found that individuals routinely experience both positive and negative feelings about their marital relationship. Sandberg and Harper (2000) treated marital quality as a composite of three indicators, including marital disagreement, marital satisfaction, and marital intimacy. Second, most of the early research on marital quality and physical health in middle and late adulthood is based on small-sized convenience samples that compromise the generalizability of the findings. Finally, these studies have failed to include an important covariate of physical health: depression. Depression is a consistent predictor of poorer health (Penninx, Leveille, Ferrucci, van Eijk, & Guralnik, 1999; Schulz et al., 1994; Williamson, Shaffer, & Parmelee, 2000). Penninx et al. (1999) found that depression in older adults is associated with an increased risk of physical disability, and Schulz et al. (1994) found that greater depressive symptomatology is predictive of poorer self-rated health in a large, probability-based sample of older adults. Furthermore, it is important to point out that marital quality and symptoms of depression are known to be reliably related (Bookwala & Jacobs, in press; Sandberg, Miller, & Harper, 2002; Whisman, 2000). Bookwala and Jacobs (2004) found that negative marital processes (e.g., level of disagreement) were associated with more depressed affect, and positive marital processes (e.g., marital happiness) were associated with lower depressed affect in young and old married individuals. Additionally, in a review of the literature linking marital quality and symptoms of depression, Whisman (2000) reported that marital dissatisfaction was significantly associated with both clinical depression and milder symptoms of depression. Thus, because of its known association with both physical health and marital quality, depression is an important covariate to control if we are to draw valid conclusions about the extent to which aspects of marital quality contribute to the variability in mature adults' physical health status. Indeed, because Kiecolt-Glaser and Newton (2001) found in their comprehensive review of studies, which examined the link between marital variables and physical health, that the vast majority of studies do not control for depression, they advise caution in interpreting conclusions about the contribution of marital quality to physical health that are drawn from such studies.

The goal of the current research is to provide a clearer understanding of the contribution of marital quality to mature adults' physical health. To achieve this, the current study incorporates multiple dimensions of marital quality, including level of marital disagreement, positive and negative spousal behaviors, global quality of the marital relationship, and marital communication. In addition, multiple indicators of physical health are employed in the study, including physical symptomatology, number of chronic health problems, physical disability, and perceived health. The broad hypothesis is that marital quality contributes significantly to physical health in the mature adulthood years. Because of the interrelationships among marital quality, depression, and physical health, this study treats depression as a control variable (in addition to sociodemographic factors) so that the unique variance in physical health that is attributable to marital quality net of depression (and other known covariates) can be determined. Finally, this study is based on a national sample of adults, drawn randomly from the U.S. population. This study used data collected as part of the National Survey of Midlife Development in the United States (MIDUS; Brim et al., 2003). The MIDUS study was designed to assess a wide variety of patterns, predictors, and outcomes related to physical health, psychological well-being, and social responsibility during the middle adulthood and later years. It assessed these variables in 1995 to 1996 in a nationally representative sample of 4,242 individuals between the ages of 25 and 74 using telephone and mail questionnaires. Characteristics of the MIDUS study that make it especially well-suited for examining the role of marital quality in physical health among mature adults include the use of random sampling, the large sample size, the inclusion of positive and negative indicators of marital quality, and multiple assessments of physical health.

Method

SAMPLE

For the current study, individuals who were at least 50 years of age, currently married, in their first marriage, and had complete data on all study variables were included in the final sample. A total of 729 respondents in MIDUS met this requirement, with a mean age of 60.5

years (*SD* = 6.8; range = 50 to 74 years). Of this group, 56.1% was male (*n* = 409) and 93.6% individuals (*n* = 682) described their race as White. More than half of this group (57.5%, *n* = 419) had received some college education or better. The mean (and median) duration of marriage in this sample was 38 years (*SD* = 7.99) with 99.6% of the sample married for more than 20 years.

MEASURES

The MIDUS study assessed multiple indicators of marital quality and health that are described below. Control variables used in this study also are described.

Marital quality. To adequately represent the multifaceted nature of marital quality, this study used five indicators of marital quality contained in the MIDUS data set. Level of marital disagreement was assessed by creating a summed composite of three items: extent of disagreement with one's spouse ranging from 1 = *a lot* to 4 = *not at all* on money matters, household tasks, and leisure-time activities. Higher scores on this measure indicated less marital disagreement. Cronbach's alpha obtained in this study for this three-item measure was .75. The mean and standard deviation for level of disagreement were as follows: *M* = 9.3, *SD* = 2.16. Positive spousal behaviors were assessed by summing six items that described caring and helpful behaviors that the respondent received from the spouse. Items were evaluated from 1 = *a lot* to 4 = *not at all* and included how much the spouse really cares for the respondent, understands the way he or she feels about things, appreciates the respondent, can be relied on for help in the event of a serious problem, can be opened up to if the respondent needed to talk about worries, and how much the respondent could relax and be himself or herself around the spouse. Scores were summed across the six items; higher scores on this measure indicated fewer positive spousal behaviors. Cronbach's alpha obtained in this study for the positive spousal behaviors measure was .91, and the sample mean and standard deviation were 8.10 and 3.10, respectively. Negative spousal behaviors were measured by summing six items reflecting uncaring and unhelpful behaviors that the respondent received from his or her spouse. Items were rated on a scale ranging

from 1 = *often* to 4 = *never* assessing the frequency with which the spouse made too many demands on the respondent, made the respondent feel tense, argued with the respondent, criticized the respondent, let the respondent down when he or she was counting on the spouse, and got on the respondent's nerves. Responses were summed on the six items describing negative spousal behaviors; higher scores indicated fewer negative spousal behaviors. The Cronbach's alpha value obtained for negative spousal behaviors with this sample was .87, and the mean and standard deviation were 16.99 and 3.6, respectively. Global quality of the marital relationship was assessed using a single item where respondents rated their marriage on a 5-point scale ranging from 1 = *excellent* to 5 = *poor.* The mean and standard deviation on this measure of global marital quality were $M = 1.91$ and $SD = .96$. Marital communication was assessed by summing four items that assessed the extent to which the respondent consulted with the spouse during decision making. The following four items were rated on a 7-point scale ranging from 1 = *strongly agree* to 7 = *strongly disagree:* "My partner and I are a team when it comes to making decisions"; "things turn out better when I talk things over with my partner"; "I don't make plans for the future without talking it over with my partner"; and "when I have to make decisions about medical, financial, or family issues, I ask my partner for advice." Higher scores reflected lower marital communication, and the Cronbach's alpha value for this 4-item measure was .88. For marital communication in this sample, $M = 6.70$, $SD = 4.00$.

Physical health. Four different indicators of physical health were used in this study. Physical symptomatology was measured using nine items where respondents indicated the frequency of occurrence of each physical symptom (e.g., headaches, lower backaches, stiffness in joints). Responses were made using a 6-point scale (1 = *almost every day* to 6 = *not at all*) and summed across the nine physical symptoms such that higher scores reflected more physical symptoms. The Cronbach's alpha obtained for this measure in the current study was .71. The mean and standard deviation values for frequency of physical symptoms were $M = 9.36$ and $SD = 7.28$. Chronic health problems were assessed by a count of 29 health problems experienced in the preceding 12 months (e.g., asthma, bronchitis or emphysema, urinary or

bladder problems, and hypertension). For this index of chronic health problems, $M = 2.88$ and $SD = 2.77$. Physical disability was assessed via two indicators of physical disability: Activities of Daily Living (ADL) and Intermediate (instrumental) Activities of Daily Living (IADL). To measure ADL, respondents were asked how much their physical health limited their ability to bathe, dress, and walk one block. To assess IADL, respondents were asked how much their physical health limited their ability to lift or carry groceries; climb several flights of stairs; bend, kneel, or stoop; walk more than a mile; walk several blocks; and do moderate activity (e.g., bowling, vacuuming). Responses were made using a 4-point scale ranging from *not at all* to *a lot*. Because ADL and IADL assessments were highly correlated ($r = .72$, $p < .001$ in the current sample), responses to all nine items were summed such that higher scores indicated greater physical disability. For this composite measure of physical disability, $\alpha = .93$, $M = 2.96$, $SD = 1.27$. Perceived health was assessed using a global single-item measure on which respondents rated their current health. A 10-point scale was used ranging from 0 *the worst possible health* to 10 *the best possible health*. On this measure of perceived health, $M = 7.37$, $SD = 1.62$.

Control variables. Several variables were treated as control variables in the data analyses because of their known association with one or more of the major study variables. These included sociodemographic factors (age, education, and gender) and symptoms of depression. The latter were assessed using the Composite International Diagnostic Interview Short Form subscale for the depression diagnostic categories (Kessler et al., 1998). Respondents were asked if they had felt sad, blue, or depressed during a period of 2 weeks or more in the past year and if they had felt a complete loss of interest in things that usually interested them during a period of 2 weeks or more in the past year. Endorsement of either of these two experiences was followed up by asking respondents to indicate the occurrence of a list of symptoms of depression (e.g., had a lot more trouble concentrating on things; did you feel down on yourself, no good, or worthless?) that may have occurred when these two experiences (feeling sad, blue, depressed and feeling a complete loss of interest in things that usually were of interest) were at their worst. A count of "yes" responses for 13

symptoms of depression (summed across both experiences) yielded a score for symptoms of depression. The mean and standard deviation for symptoms of depression were .40 and 1.44, respectively.

Results

First, bivariate correlations were computed between the marital quality variables and physical health indicators (see Table 1). As expected, the various health indicators were significantly correlated with each other ($| r | \geq .42$, $p \leq .05$). All correlations were in the expected direction; for example, more physical symptoms, more chronic health problems, and more physical disability were associated with poorer perceived health. Likewise, the five indicators of marital quality were significantly correlated with one another ($| r | \geq .37$, $p \leq .05$). Once again, all correlations were in the expected direction, for example, more marital disagreement, fewer positive spousal behaviors, more negative spousal behaviors, and less marital communication were related to a less favorable global evaluation of the quality of the marital relationship. Bivariate correlations also supported the inclusion of depression as a control variable in examining the relationship between marital quality and physical health. Depression was significantly correlated with all four indicators of physical health (range of $| r | = .09$ to .19, $p \leq .05$). As expected, higher depression scores were associated with worse health in all instances. Depression also was significantly correlated with four of the five marital quality indices (the exception was marital communication) with a range of $| r | = .08$ to .11, $p \leq .05$. Consistent with expectations, higher depression scores covaried with poorer marital quality.

Next, a series of regression analyses was performed (see Table 2) in which each physical health measure (physical symptoms, chronic health problems, physical disability, and perceived health) was regressed on sociodemographic variables and symptoms of depression (Step 1) followed by the complete set of marital quality indicators (level of disagreement, positive spousal behaviors, negative spousal behaviors, marital communication, and global marital quality). For each regression analysis, multicollinearity statistics in the form of variance inflation factors and tolerance were assessed. This precaution was taken because of the significant bivariate-level correlations

Table 1
Bivariate Correlations Between Indicators of Marital Quality and Physical Health

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Disagreement (1)		–.46	.52	–.46	–.37	–.20	–.13	–.08	.11
Positive spousal behaviors (2)			–.62	.75	.64	.16	.12	.05	–.13
Negative spousal behaviors (3)				–.65	–.49	–.26	–.16	–.15	.15
Global marital quality (4)					.60	.17	.12	.06	–.10
Marital communication (5)						.11	.10	.02	–.05
Physical symptoms (6)							.59	.45	–.43
Chronic health problems (7)								.42	–.46
Disability (8)									–.50
Perceived health (9)									

Note: $|r| \geq .09$ significant at $p < .05$ or better; $|r| \geq .12$ significant at $p \leq .001$ or better. Higher scores represent less marital disagreement, fewer positive spousal behaviors, fewer negative spousal behaviors, poorer global marital quality, lower marital communication, more physical symptoms, more chronic health problems, more physical disability, and better perceived health.

among the five marital quality indicators. These tests indicated that multicollinearity among the predictor variables did not compromise the results of the present study. The variance inflation factor for most predictor variables was < 2 and in no case > 3; the corresponding tolerance values (representing the reciprocal of the variance inflation factor for each predictor variable) was > .50 for most predictors and in no case < .30. These values are well within the acceptable range and do not violate the conventional cutoff values of ≥ 10 for the variance inflation factor and ≤ .10 for tolerance that are used to signal that multicollinearity among predictor variables may be an issue of concern (Cohen, Cohen, West, & Aiken, 2003).

In Step 1, the results for physical symptoms indicated that being female, less educated, and experiencing more symptoms of depression were significantly related to greater physical symptomatology. As a set, these variables accounted for 11.3% of the variance in physical symptoms. On Step 2, the marital quality indicators explained an additional 5.1% of the variance in physical symptoms. After controlling for all other variables in the model, more physical symptoms were significantly predicted by a higher level of disagreement ($\beta = -.11$, $t[719] = -2.70$, $p < .05$) and more negative spousal behaviors ($\beta = -.19$, $t[719] = -3.86$, $p < .001$).

When the same regression analysis was performed to predict chronic health problems, sociodemographic variables and symptoms

Table 2
Regression Analyses Predicting Physical Health Using Marital Quality Indicators and Control Variables

		Physical Symptoms			*Chronic Health Problems*			*Disability*			*Perceived Health*		
Step 1	R^2	.113			.056			.101			.036		
	$F(4,724)$	23.13***			10.77***			20.35***			6.69***		
		β	SE	t	β	SE	t	β	SE	t	β	SE	t
Age		.01	.04	n.s.	.09	.02	2.43*	.21	.01	5.97***	–.11	.01	–2.99**
Gender		.23	.53	6.40***	.09	.21	2.48*	.13	.09	3.65***	–.02	.12	n.s.
Education		–.13	.26	–3.62***	–.12	.10	–3.15***	–.13	.05	–3.63***	.11	.06	3.00**
Depression		.16	.18	4.39***	.14	.07	3.90***	.13	.03	3.60***	–.10	.04	–2.58**
		Physical Symptoms			*Chronic Health Problems*			*Disability*			*Perceived Health*		
Step 2	ΔR^2	.051			.024			.025			.026		
	$\Delta F(5,719)$	8.77***			3.76**			4.05***			3.99**		
		β	SE	t	β	SE	t	β	SE	t	β	SE	t
Disagreement		–.11	.14	–2.70*	–.07	.06	–1.61	–.04	.03	n.s.	.04	.03	n.s.
Positive spousal behaviors		–.04	.14	n.s.	.00	.05	n.s.	–.05	.02	n.s.	–.11	.03	–1.81†
Negative spousal behaviors		–.19	.10	–3.86***	–.11	.04	–2.09*	–.20	.02	–3.90***	.11	.02	2.18*
Global marital quality		–.03	.43	n.s.	–.04	.17	n.s.	–.06	.08	–1.05	.05	.10	n.s.
Marital communication		.01	.08	n.s.	.05	.03	n.s.	–.03	.02	n.s.	.06	.02	n.s.
		Physical Symptoms			*Chronic Health Problems*			*Disability*			*Perceived Health*		
Complete model	R^2	.164			.080			.126			.062		
	$F(9,719)$	15.71***			6.96***			11.49***			5.25***		

Note: Higher scores represent being older, being female, higher education, more symptoms of depression, less marital disagreement, fewer positive spousal behaviors, fewer negative spousal behaviors, poorer global marital quality, lower marital communication, more physical symptoms, more chronic health problems, more physical disability, and better perceived health.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

of depression collectively explained 5.6% of the total variance in Step 1. As Table 2 indicates, being older, female, less educated, and more symptomatic of depression were associated with more chronic health problems. When the marital quality indicators were introduced in Step 2, they explained an additional 2.4% of the variance in chronic health problems. More chronic health problems were associated with higher levels of negative spousal behaviors ($\beta = -.11$, $t[719] = -2.09$, $p < .05$). Level of physical disability was regressed next on the control variables and marital quality indicators. In Step 1, being older and female, having less education, and experiencing more symptoms of depression were predictive of higher levels of physical disability. Table 2 indicates that as a set, 10% of the variance in physical disability was attributable to these variables. The indicators of marital quality explained an additional 2.5% of the variance in physical disability. Among the marital quality indicators introduced in the regression model in Step 2, once again negative spousal behaviors contributed to the variance in physical disability net of all other predictor variables. Higher levels of negative spousal behaviors predicted greater physical disability ($\beta = -.20$, $t[719] = -3.90$, $p < .001$). A similar pattern of results emerged when perceived health was treated as the criterion variable. In Step 1, the control variables accounted for 3.6% of the variance in perceived health with older age, lower educational levels, and more depression associated with poorer perceived health. An additional 2.6% of the variance in perceived health was attributable to the indicators of marital quality. Once again, higher levels of negative spousal behaviors emerged as a significant predictor of poorer perceived health ($\beta = .11$, $t[719] = 2.18$, $p < .05$); positive spousal behaviors reached marginal statistical significance ($\beta = -.11$, $t[719] = 1.81$, $p < .08$), with the trend indicating that fewer positive spousal behaviors predicted worse perceived health.

Because previous research has found gender differences in the extent of support received from one's spouse and other sources (e.g., Antonucci & Akiyama, 1987), as well as in the association between spousal support and marital satisfaction (e.g., Acitelli & Antonucci, 1994), the regression analyses described above were re-run to determine the potential moderating role of gender in the relationship between marital quality and physical health. A moderated regression approach (see Newsom, Prigerson, Schultz, & Reynolds, 2003) was

used that tests the existence of gender-based differences in the strength of the relationship between marital quality indicators and physical health. Newsom et al. (in press) recommend this approach rather than running separate regression models by gender because it avoids statistical and interpretational problems that can accompany subgroup-based analyses. To avoid the problem of multicollinearity that occurs when interaction terms are introduced in the model, the marital quality predictors were centered around the mean, and five separate interaction terms were computed using each centered predictor and gender (0 = male, 1 = female) for these analyses (Cohen et al., 2003). The control variables (including gender) and centered marital quality predictors were introduced in Step 1 in the regression model, and the interaction terms between gender and the centered predictor variables were stepped into the model next. Consistent with findings for Mexican American married men and women (Farrell & Markides, 1985), this second round of multiple regressions found no support for gender as a moderator of the marital quality—physical health link. For three of the four regression models (i.e., predicting chronic health problems, physical disability, and perceived health), adding the interaction terms produced no significant improvement in the model ($\Delta F \leq 1.43$, $p > .20$). For physical symptomatology, although the set of interaction terms produced a significant improvement in the model ($\Delta F = 2.39$, $p < .05$, $\Delta R^2 = .014$), none of the interaction terms for Gender × Marital Quality predictors was associated with unique explained variance in physical symptoms.

Discussion

The present study investigated the role of marital quality in the physical health of adults aged 50 years and older who participated in the National Survey of MIDUS. Multiple indicators of physical health (physical symptomatology, chronic health problems, physical disability, and perceived health) were each regressed on five indicators of marital quality, some positive and others negative. Specifically, level of marital disagreement, positive spousal behaviors, negative spousal behaviors, marital communication, and global marital quality were used as predictor variables. The overall hypothesis was that marital

quality can play a significant role in physical health during the mature adulthood years. The results indicated that after controlling for sociodemographic variables and symptoms of depression, marital quality indicators—most notably, negative spousal behaviors—indeed contributed significantly to physical health. The pattern of findings was invariant across men and women as follow-up analyses that tested the potential moderation of the marital quality—physical health link by gender were not supported.

The small body of literature on the link between the nature of marital relationships and physical health among middle-aged and older couples has found that marriages that are more harmonious or characterized by higher satisfaction can be related to better sleep patterns, fewer physician visits, and better physical health (Farrell & Markides, 1985; Levenson et al., 1993; Prigerson et al., 1999, 2000). The current study expands the existing knowledge base on the link between marital quality and physical health in middle-aged and older adults by indicating that when both positive and negative characteristics of marriage are considered, negative spousal behaviors repeatedly emerge as correlates of poorer physical health as indexed by multiple dimensions, including physical disability, chronic illnesses, physical symptoms, and self-rated health. The current findings are especially valuable because, unlike most of the studies to date (see Kiecolt-Glaser & Newton, 2001) that have used small purposive samples of middle-aged and older adults (e.g., those caring for an ill spouse), the present study is based on a large probability-based sample of middle-aged and older individuals. Second, in contrast with earlier studies, the present study examined the predictive utility of marital quality for physical health net of depressive symptomatology. Because scientific evidence has consistently linked physical health and depression (Williamson et al., 2000) and marital quality and depression (Whisman, 2000), conclusions drawn from findings of previous research linking physical health and marital quality without controlling for depression have called for caution (Kiecolt-Glaser & Newton, 2001). For all these reasons, the current findings linking marital quality and physical health in mature adults can be viewed as more reliable and more readily generalizable to the population of adults in their midlife years and beyond.

As indicated earlier, when the relative role of positive and negative dimensions of marital quality was compared, this study found that positive aspects of marriage did not uniquely contribute to physical health in this sample. However, a consistent pattern of findings was that negative spousal behaviors contributed significantly to the variance in each indicator of physical health. After controlling for sociodemographic variables (age, gender, and education), symptoms of depression, and all other indicators of marital quality, more negative spousal behaviors predicted more physical symptoms, more chronic health problems, more disability, and poorer perceived health. This pattern of findings is consistent with the negativity effect evident in the broader literature on the relative impact of positive and negative social exchanges on health and well-being (Rook, 1997). The negativity effect refers to findings that negative social exchanges are more strongly and reliably associated with well-being than positive social exchanges. Extrapolating the negativity effect to explain the current findings, we can conclude that the receipt of negative behaviors from one's spouse outweighs the role of positive spousal behaviors in physical health. In short, just as negative spousal behaviors can increase the risk of depression (Parry & Shapiro, 1986), it appears that they can increase the risk of poorer physical health.

Past research already indicates that negative interactions with one's spouse, such as those assessed in the MIDUS study (e.g., my spouse makes too many demands on me; my spouse gets on my nerves), are known to occur even during the mature years (Akiyama, Antonucci, Takahashi, & Langfahl, 2003). The present results highlight that when such negative spousal behaviors occur in this life stage, they have the potential to play a detrimental role in physical health. One explanation for why negative spousal behaviors may be implicated in older adults' poorer health may be that they represent a form of chronic strain (Krause & Rook, 2003). Krause and Rook (2003) report that, in general, negative social interactions tend to be fairly stable across time and that interactions, such as those with one's spouse, are likely to be difficult to avoid or eliminate. Thus, we can expect that the chronicity of negative spousal behaviors may have a cumulative and long-term effect on health outcomes similar to those associated with other chronic psychological stressors, such as caregiving burden. Krause and Rook also found that negative interactions tended to characterize

more than a single social relationship for many older adults (e.g., with spouse, friends, and children). A promising area for future research is to compare the relative contribution of negative spousal behaviors to physical health with those of negative behaviors expressed by friends and other family members. Such a comparison would enable us to identify whether and to what extent negative spousal behaviors account for unique variability in physical health outcomes net of the contribution of negative social exchanges that occur in other types of social relationships.

Another explanation for the detrimental role of negative spousal behaviors in physical health derives from further examination of the content of the Negative Spousal Behaviors Scale. The items in this measure included the receipt of criticism from one's spouse, excessive demands made by the spouse, and the elicitation of negative emotions in the respondent by the spouse. These characteristics can be seen as overlapping with the construct of expressed emotion. Expressed emotion has been defined as an individual's tendency to engage in expressions of criticism and overinvolvement (Vitaliano et al., 1993). Vitaliano et al.'s (1993) findings in the area of caregiving research indicate that expressed emotion in caregivers predicted more behavior problems in their care recipients who had been diagnosed with dementia. The present findings indicate that such criticism and excessive demands from a spouse also may have a detrimental impact on the targeted spouse's physical health.

As indicated above, the current findings are empirically important because they demonstrate reliable links between negative spousal behaviors and physical health in a probability-based sample of mature individuals. They also have important clinical implications because levels of negative spousal behaviors in a marriage may be amenable to intervention. To the extent that marital therapy can be designed to reduce or eliminate the exchange of criticism and excessive demands and the elicitation of negative emotions between spouses, it may be possible to lower levels of physical symptoms, chronic illness conditions, physical disability, and poor perceived health that may be attributable to the exchange of negative spousal behaviors within long-term marriages. Marital therapy is recognized as an efficient means for lowering marital distress (Gee, Scott, Castellani, & Cordova, 2002;

Kung, 2000) that, in turn, may have beneficial effects on physical health for those undergoing such interventions.

Despite the significance of the present findings, it is important to bear in mind that the use of cross-sectional data precludes any definitive causal conclusions about the relationship of marital quality to physical health. This study is based on the assumption that marital quality contributes to physical health during the mature years. However, it is just as reasonable to assume that impaired physical health contributes to poorer marital quality. Clearly, longitudinal data analyses are necessary to establish the validity of the causal relationship between marital quality and physical health. As future waves of the MIDUS data set become available, they will make it possible to address this issue. It is important to note, however, that recent studies have found that although a close marital relationship protects the psychological well-being of elderly spouse caregivers across a 2-year period, neither poorer psychological well-being nor increased caregiving strain appear to erode marital closeness over the long term (Zdaniuk, Bookwala, & Schulz, 2003). Although Zdaniuk et al. (2003) did not include physical health as an outcome variable, their study suggests that marital quality, at least among mature adults, may be quite robust in the face of chronic stressors.

A second limitation of the present study is that the health variables included in this study were self-reports, and it remains to be seen if these findings can be replicated with objective health indices. Research with younger adults has found that lower marital adjustment is associated with higher blood pressure and heart rate (Baker et al., 1999; Carels et al., 1998). Similar research with more mature adults would serve to further validate the current findings. With regard to assessments of the marital quality variables, it is important to note that mean scores on the different dimensions indicated that, in general, respondents enjoyed superior marital quality, describing their marriages as characterized on average as having less disagreement, few negative spousal behaviors, high positive spousal behaviors, high global marital quality, and good marital communication. Thus, the present results may not be readily generalizable to mature adults who are in distressed marriages. Future research using older couples seeking marital therapy is recommended to determine the extent to which

poorer marital quality contributes to worse physical health in this population.

Finally, the current study was based on self-reports of marital quality rather than observational measures of marital interaction between spouses that may provide more accurate representations of marital communication styles. Nevertheless, the present findings are consistent with those of previous research based on marital interaction data collected from convenience samples of older marital dyads. For example, evidence indicates that negative marital interaction has immediate effects on physiological function, such as blood hormonal levels and cardiovascular reactivity in older married couples (Kiecolt-Glaser et al., 1997). The present findings indicate that negative marital processes also can contribute to older individuals' broader health indicators, such as physical symptomatology, chronic health conditions, and disability levels. In sum, the limitations of the present research notwithstanding; its considerable strengths, the use of a probability-based sample of mature adults; inclusion of multiple health indicators; the incorporation of positive and negative dimensions of marital quality; and the inclusion of symptoms of depression as a covariate enable it to make a valuable contribution to the existing evidence linking marital quality to physical health in adults aged 50 years and older.

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