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Is Marital Quality Related to Physical Activity Across the Life Course for Men and Women?

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Abstract

Objectives: Although physical activity is linked to multiple health outcomes, a majority of Americans do not meet physical activity guidelines, often with precipitous declines among older adults. Marital quality is a less-explored, but important, factor that may influence physical activity, as spouses often influence each other's health behaviors. **Methods:** We use nationally representative panel data to investigate whether positive and negative dimensions of marital quality influence physical activity, and whether age and gender moderate these relationships. **Results:** We find that both marital support and strain are related to higher odds of more frequent active exercise and walking, pointing to the complex influence of marital quality. Marital support became increasingly important to higher levels of walking frequency as men aged. **Discussion:** This study provides new information on the ways in which both positive and negative dimensions of marital quality may contribute to trajectories of physical activity across the life course.

Keywords: marriage, health behaviors, gender

Is Marital Quality Related to Physical Activity Across the Life Course for Men and Women?

Lack of physical activity can have substantial consequences for health and mortality risk (Aggio et al., 2020). Some of the many established benefits of physical activity include improved quality of life, increased balance, and increased functional capacity (Allender et al., 2008; Kämpfen & Maurer, 2016). Regular physical activity can also prevent or delay the onset of chronic diseases such as heart disease, stroke, diabetes, depression, and cancer (Kämpfen & Maurer, 2016). Despite the evidence behind the benefits of physical activity and the consequences of inactivity, a majority of U.S. adults do not meet recommended guidelines (Centers for Disease Control and Prevention, 2020; Hall et al., 2017).

Moreover, physical activity levels often fall precipitously as individuals age (Centers for Disease Control and Prevention, 2020; Shaw et al., 2010). High-intensity physical activity (e.g., aerobic exercise and sports) may fall more dramatically at older ages compared to low-intensity physical activities (e.g., walking), which may be more common at a variety of ages (Simpson et al., 2003). Given this evidence, it is important to study different types of physical activity as individuals age. Furthermore, by the year 2035 it is projected that there will be close to 78 million people age 65 and older in the U.S. alone (United States Census Bureau, 2021), and as this older population continues to expand, combined with the onset of age-related diseases, it is imperative to understand factors that may influence older adults' physical activity levels. As a modifiable, positive health behavior with implications for health outcomes and well-being across the life course, it is vital to better understand what may deter or encourage individuals to engage in various types of physical activity.

One such factor for better understanding physical activity behaviors may involve the marital relationship. This may be particularly important for older adults who often lose other social

roles yet increase interactions with their spouse (Carstensen, 1992). Spouses have the potential to be powerful sources of influence that may become even more influential as individuals age. On the one hand, marriage has been linked to fewer risky health behaviors (e.g., less smoking and alcohol consumption), yet marriage has also been linked to a higher likelihood of being overweight and engaging in less exercise (Umberson et al., 2010). Some studies suggest married adults engage in *more* physical activity (e.g., Pettee et al., 2006; Sobal & Hanson, 2010), while other studies suggest they engage in *less* physical activity (e.g., Nomaguchi & Bianchi, 2004). This mixed evidence suggests that not all marriages may be equal in their impact on health and health behaviors. The quality of the marriage, in terms of marital support (e.g., feeling loved and cared for, feeling listened to), as well as marital strain (e.g., feeling bothered/upset, experiencing conflicts) have not been fully explored in their potential impact on health behaviors. While some research suggests that marital quality may be more important for women than men in terms of their health and well-being (e.g., Kiecolt-Glaser & Newton, 2001), other research points to married men being more likely to be on the receiving end of the regulation of their health behaviors from their spouse, and subsequently better health, than married women (Umberson, 1992). Thus, it is possible that there may be gender differences in the impact of marital quality on physical activity. Furthermore, we do not know whether these differences change as individuals age.

The present study uses nationally representative longitudinal panel data from the Americans' Changing Lives survey to address the following research questions: 1) Are positive and/or negative dimensions of marital quality related to trajectories of high and/or low-intensity physical activity levels over time? 2) Do the associations between marital quality and physical activity vary by age and gender? In addressing these questions, we contribute to a greater

understanding of the impact of marital relationships on physical activity patterns across the life course and whether these relationships may contribute to gender disparities in health behaviors.

Theory and Evidence

The marital relationship is one of the most important relationships affecting health, health behaviors, and well-being for much of the life course (Umberson & Montez, 2010), and as people age, the marital relationship may increase in importance and focus (Carstensen, 1992). Marital quality has been linked to health, and one mechanism may be through its impact on health behaviors (Robles et al., 2014). Although many studies focus on social support and satisfaction, marital quality involves both positive and negative dimensions, often simulataneously (Johnson et al., 1986; Xu et al., 2016). We examine how both of these dimensions of marital quality might matter for both high- and low-intensity physical activity differently by gender across the life course.

Several theoretical frameworks suggest that marital support would be related to higher levels of physical activity. Social integration theory argues that greater attachment to society through our social relationships leads us to conform to normative pressures and avoid pathologies, which can benefit our health (Berkman et al., 2000). This theory further suggests that social ties, such as the marital relationship, can help provide a greater sense of purpose and increase motivation, as well as pressure, to engage in health-promoting behaviors (Berkman et al., 2000). Married adults will often encourage, regulate, and make health behavior changes together (Arden-Close & McGrath, 2017; Lewis & Butterfield, 2007). Stress process theory argues that stressors can lead to poor health outcomes, but also points to resources that can buffer stress and improve health (Pearlin, 1999). The stress model suggests that emotional support can be a resource to promote healthy behaviors (Cho et al., 2014). Empirical evidence also suggests that supportive

relationships are associated with healthier behaviors (Kiecolt-Glaser & Newton, 2001), with support from a spouse being important for both starting and maintaining regular exercise habits (Barnett et al., 2013). Taken together, previous research and theory provide reasons to hypothesize that: *Those with more emotional support from their spouse will have higher levels of physical activity (i.e., both walking and active exercise)* (Hypothesis 1).

Both social integration and the stress model have implications for the importance of marital strain for physical activity patterns; however, it is less clear whether marital strain would have a positive or negative relationship with physical activity. The stress model suggests that marital strain can be an important source of stress, which is in turn related to worse health behaviors (Ng & Jeffery, 2003). Stress may limit the time and/or emotional and physical energy to focus on health-promoting behaviors, such as physical activity, and empirical evidence suggests a link between greater stress and decreases in physical activity (e.g., Steptoe et al., 1996). In contrast, other evidence suggests that marital strain may be related to *greater* physical activity. Some individuals may externalize and cope with stress through engaging in physical activity (Salmon, 2001), so individuals may exercise more when experiencing the stress of a strained marital relationship. This is supported by research showing that strained relationships with adult children are related to higher levels of physical activity (Thomas et al., 2019), and it is possible that this extends to other relationships, such as the marital relationship. Social control can be an important part of social integration whereby individuals may attempt to control or regulate the health behaviors of their significant others, promoting healthier behaviors and trying to impede riskier behaviors (Umberson, 1992; Umberson et al., 2010). Spouses may have negative feelings when they are constantly reminded to adhere to a healthy lifestyle which may prompt marital strain, but

they may ultimately engage in health-enhancing behaviors, with implications for their health (Xu et al., 2016). Given these opposing pathways, we present competing hypotheses for marital strain:

Experiencing greater marital strain will be related to <u>*lower levels*</u> (Hypothesis 2a) or <u>*higher*</u> *levels* (Hypothesis 2b) *of physical activity (i.e., frequency of walking and active exercise).*

Age and Gender Moderation

Although it is known that frequency of physical activity often falls precipitously as individuals age (Shaw et al., 2010), we do not know whether the impact of emotional support from a spouse or strain with a spouse may influence physical activity levels differently as individuals age. However, it is possible that as physical activity wanes, support and strain from a spouse may become particularly important. Moreover, we do not know whether the impact of marital quality on physical activity levels across different ages may vary by gender.

There is mixed evidence regarding gender and physical activity trajectories. Married women tend to engage in less physical activity than married men (Nomaguchi & Bianchi, 2004), but others have found no gender differences in this relationship (Rapp & Schneider, 2013). It is important to move beyond marital *status* into the *quality* of the marital relationship, because we know very little about the impact of marital quality on physical activity by gender. Studies examining other health behaviors suggest mixed evidence on gender differences in the impact of marital quality. For example, marital conflict was related to more drinking and smoking for women, but a higher likelihood of exercising for men (Cohen et al., 1991). Experiencing marital distress or mental distress was related to a higher likelihood of women avoiding protective health behaviors (Leiferman & Pheley, 2006; Schafer et al., 2000), suggesting that marital distress may also have negative implications for other proactive health behaviors such as physical activity among women. However, Kaplan and colleagues (2001) found that social support was linked to

greater physical activity among women but not among men. Further, theoretical work on gender suggests that cultural norms of femininity emphasize taking care of others and subsuming personal needs (Connell, 1987; Jordon et al., 2004), which could lead to lower levels of physical activity for women. As a result, wives may be more likely to neglect their own health and leisure activity (Erickson, 2005).

There is little, if any, research specifically examining how the relationship between marital quality and physical activity changes with age, and even less that explores gender differences in tandem. Studies examining how marital quality is associated with other health outcomes suggest that marital quality may be more impactful as individuals age, as seen in studies showing that the relationship between marital quality and cardiovascular risk (Liu & Waite, 2014), marital strain and declines in self-rated health (Umberson et al., 2006), and marital satisfaction and health-related biomarkers (Wilson et al., 2021) all became more pronounced with age. At the same time, while women of all ages tend to be less active than their male counterparts (Centers for Disease Control and Prevention, 2020), both men and women typically experience age-related declines in physical activity levels (Centers for Disease Control and Prevention, 2020; Shaw et al., 2010). However, as men and women age, gender differences are likely seen in the types of physical activities performed and in gendered processes of coping with the stress of poor marital quality. Women across age groups report walking more than men and state a preference for walking over more vigorous activities (Simpson et al., 2003). Li and colleagues (2017) report that men experienced a sharp decline in walking frequency with age whereas women report more of a decline in moderate-to-vigorous physical activity. Women often internalize stress in the form of depression (which is linked to less physical activity), whereas men are more likely to externalize stress, possibly through vigorous exercise and sports (Rosenfield & Mouzon, 2013), suggesting

that women's exercise levels may decline more with poor marital quality than men's. More vigorous physical activity in the face of marital strain could reflect cultural norms of masculinity wherein men attempt to be strong and focused on their own needs (Jordon et al., 2004; Wood, 2000), as well as associations of sports and high-intensity physical activity with masculinity (Messner, 2002), so it is possible that men may be more positively affected by the stress of marital strain in their physical activity trajectories. Moreover, women may be more likely to attempt to regulate their spouse's health behaviors, so men's physical activity trajectories may increase due to their spouse's prodding (Reczek & Umberson, 2012; Umberson, 1992), with implications for their marital quality and their physical activity. It is possible that marital quality, and gendered reactions to it, could exacerbate the gender differences seen in physical activity during the aging process.

Taken together, this body of research suggests that: *Age and gender will moderate the associations between marital quality and physical activity, such that marital quality will matter more as adults age and this relationship will differ by gender* (Hypothesis 3).

Methods

Data and Measures

Data come from the Americans' Changing Lives (ACL) survey, a nationally representative study of individuals aged 25 and older in Wave 1 in 1986, with an oversampling of African Americans and adults aged 60 and older (N=3617). The ACL followed up with these respondents with measurements in 1989, 1994, 2001/2002, and 2011/2012 (House, 2014). The current study focuses on 1,934 married individuals contributing 5,728 observations.

Dependent Variables. Two physical activity measures were assessed and analyzed separately: (1) how often respondents engaged in active sports or exercise ("*active exercise*") and

(2) how often respondents took walks ("*walking*"). Response categories for each measure included 0=never, 1=rarely, 2=sometimes, and 3=often.

Marital Support is the average score (0-4) of two items: (1) "How much does your (husband/wife) make you feel loved and cared for?" (2) "How much is (he/she) willing to listen when you need to talk about your worries or problems?" Responses range from 0="not at all" to 4="a great deal". This variable is time-varying, and higher scores reflect more marital support.

Marital strain is the average score (0-4) from two items: (1) "Taking everything into consideration, how often do you feel bothered or upset by your marriage?" (responses range from 0="never" to 4="almost always"); (2) "How often would you say the two of you typically have unpleasant disagreements or conflicts?" Responses range from 0="never" to 4="daily or almost daily"). This variable is time-varying, and higher scores reflect more marital strain.

Control Variables. We adjusted analyses for *age* (25-90; with ages older than 90 top-coded due to sparce data). Time-invariant variables included *gender* (1=women, 0=men), *race* (1=white, 0=nonwhite), and *education* (highest grade/year completed, 0-17+). We controlled *wealth* (<$10k, $10-19k, $20-49k, $100-199k, $200-499k, $500+) at baseline due to inconsistent measurements across waves and substantial missing data at later waves. Time-varying variables included yearly *family income* from all sources (0=less than $5,000 to 10=$80,000+), *employment status* (1=currently employed, 0=not currently employed), *depressive symptoms* (11 items from the Center for Epidemiologic Studies Depression Scale), *self-rated health* (1=poor to 5=excellent), number of *chronic conditions* (arthritis, lung disease, hypertension, heart attack, diabetes, cancer, stroke, broken bones, and urinary incontinence in the last 12 months), and *activities limited by health* (0="not at all" to 4="a great deal"). We also controlled for respondents who had *remarried* during the survey years (1=remarried, 0=otherwise).

Analytic Strategy

We analyzed multilevel ordered logistic regression models. Ordered logistic models are appropriate because the outcome variables (frequency of active exercise and frequency of taking walks, analyzed separately) were at the ordinal level, with ranked categories of increasing frequency (never, rarely, sometimes, often). A multilevel model is used due to the hierarchical nature of the data in which repeated observations (level 1) are nested within individuals (level 2). Coefficients represent the odds of moving into a higher category of more frequent physical activity.

Given our emphasis on aging and the life course as well as trends in physical activity declining substantially with greater age and especially among older adults (Shaw et al., 2010), we are better able to assess trajectories of physical activity as respondents age across the life course by using *age* rather than wave of survey as the metric of time in our modeling. This is an estimation strategy well-suited to the life course framework and advantageous in allowing data that are unbalanced in time (Yang & Lee, 2009). Data were restructured by age such that, for example, respondents' ratings of support were ascertained as support at age 60 whether respondents were age 60 in wave 1, wave 2 and so forth, for each year of age (due to sparseness in data at the oldest ages, we top-coded age 90+; sensitivity analysis top-coding 85+ yielded a similar pattern of results). We reshaped the data from wide format (i.e., each respondent is represented as a row with their responses to each variable in separate columns, and all waves/measurement occasions are in this same row) to long format (i.e., variables are stacked and one respondent can have multiple rows depending on the number of measurement occasions they contributed, and a unique ID number links the respondent to each observation they provided). This is an important step for

preparing data for analyzing multilevel models with time-varying variables. This expanded the data such that multiple observations were embedded within each individual (i.e., individual respondents could contribute multiple person-age observations; in our sample this ranges from 1 to 5 measurement occasions with an average of about three measurement occasions contributed per respondent), resulting in 5,728 observations embedded within 1,934 respondents.

We centered age around 60 years old. Given our interest in aging and older adulthood and that physical activity often declines precipitously at older ages, age 60 is a meaningful centering point and enables the estimation of interactions to be more substantively meaningful. Our sample includes respondents as young as 25 years old, which allows us to understand the impact of marital relationships over a longer span of the life course, reduces the amount of health and mortality selection often occurring in exclusively older samples, and is appropriate for our focus physical activity across the life course. We handled item-missing data using listwise deletion (N=515 observations deleted, with the control variables of wealth and depressive symptoms as the largest contributors to missing data). Missing data due to attrition was not deleted, as multilevel models can handle unbalanced occasions (Yang & Lee, 2009). Supplementary models, including those adjusting for differential rates of attrition due to dropout and death using a similar approach as Brown et al. (2016) yielded a similar pattern of findings. We conducted analyses using Stata version 16.

Results

Table 1 displays descriptive statistics (for all observations across all measurement occasions) for the total sample and by gender. Men engaged on average in significantly more frequent active exercise, but men and women engaged in similar levels of walking on average. Men reported significantly higher levels of average marital support and lower levels of marital

strain than women. On average, men had significantly higher incomes, education, and employment. Men also had fewer depressive symptoms, better self-rated health, fewer chronic conditions, and were less likely to have their activities limited by their health. Unconditional models (without covariates; models not shown) find that frequency of exercise decreases as individuals age (OR = 0.97, p<.001), whereas frequency of walking is fairly steady across age (OR = 1.003, p=.313).

[Table 1 about here]

Tables 2 and 3 present results from multilevel ordered logistic regression models estimating the associations of marital quality with active exercise (Table 2) and frequency of walking (Table 3). Model 1 in each table includes marital support, marital strain, and control variables. Model 2 in each table adds interactions by age and gender. Model 1 in Table 2 shows that both marital support and marital strain were significantly related to more frequent active exercise (10% and 16% higher odds, respectively). Being older, female, employed, having more depressive symptoms, and more chronic conditions were all significantly related to lower levels of active exercise, while higher education level, higher income, more wealth, and better self-rated health were significantly related to higher levels of active exercise. Model 2 shows that interactions with age and gender were not statistically significant, suggesting that marital strain and support were related to active exercise similarly across the life course and this relationship was similar for men and women.

[Table 2 about here]

Table 3 presents results from multilevel ordered logistic regression models estimating the associations of marital quality and frequency of taking walks. Model 1 shows that both marital support and marital strain were significantly related to more frequent walking (12% and 16%

higher odds, respectively). Whereas older age was related to *less* frequent active exercise in Model 1 of Table 2, older age was significantly related to *more* frequent walking in Model 1 of Table 3. This model also shows that more education and better self-rated health were significantly related to higher frequency of walking, while employment status, depressive symptoms, and experiencing activities being limited by one's health were significantly related to lower odds of frequent walking. Next, all interactions between marital quality, age, and gender were tested, revealing significant interactions by marital support, age, and gender. Model 2 displays a model including only the interactions with marital support because none of the interactions with marital strain were statistically significant. The significant three-way interaction between marital support, age, and gender prompted us to stratify the sample by gender to better understand these patterns (Models 3 and 4). These models show that the marital support by age interaction was only significant among men, not among women. Figure 1 illustrates this relationship among men (this model treats walking frequency as continuous rather than ordinal for ease of illustration; results were the same), showing that higher levels of marital support become increasingly important for trajectories of more frequent walking at older ages for men. Men who lack emotional support from their spouse tend to decline in walking frequency as they age, whereas men who receive high levels of emotional support from their spouse increase in their walking frequency as they age.

[Table 3 and Figure 1 about here]

Discussion

Regular physical activity can not only prevent or delay the onset of chronic disease, but it can also improve quality of life and increase functional capacity (Allender et al., 2008; Kämpfen & Maurer, 2016). With over 50% of U.S. adults not meeting the recommended physical activity

guidelines (Centers for Disease Control and Prevention, 2020; Hall et al., 2017), combined with declines in physical activity prevalence at older ages (Shaw et al., 2010) and population aging increasing the number of individuals in this at-risk group, it is imperative that research be centered around increasing physical activity. Reflective of national trends in not meeting recommended physical activity, average levels of physical activity in our study fall between "rarely" and "sometimes" engaging in active exercise and "sometimes" engaging in walking. Spouses often influence each other's health behaviors (Arden-Close & McGrath, 2017), so aspects of the marital relationship may be important for increasing physical activity behaviors as adults age. This is an understudied area with mixed findings thus far (e.g., Nomaguchi & Bianchi, 2004; Rapp & Schneider, 2013). Some marital relationships support more physical activity while others may hinder physical activity (Nomaguchi & Bianchi, 2004; Pettee et al., 2006). Moving beyond marital status to the impact of *emotional support* from a spouse and *marital strain* on health behaviors (and specifically physical activity) has not been thoroughly explored. Guided by theories on stress and social integration and health, while utilizing nationally representative panel data from the Americans' Changing Lives survey, we are able to contribute to the understanding of how marital relationships influence physical activity behaviors across the life course.

Hypothesis 1 predicted that those with more emotional support from a spouse would engage in more physical activity. Our findings support this hypothesis and suggest that marital support may be an important resource for individuals' physical activity trajectories. Higher levels of emotional support from spouses were related to higher odds of more frequent active exercise and walking. These findings are consistent with insights from social integration theory suggesting that spouses can help provide a greater sense of purpose and motivation to engage in health-promoting behaviors, such as physical activity (Berkman et al., 2000).

Theoretical frameworks could suggest either a positive or negative relationship between strain and physical activity, so we presented competing hypotheses (2a and 2b) regarding whether marital strain would be related to lower or higher levels of physical activity, respectively. The results show that marital strain was related to significantly higher odds of both more frequent active exercise and walking. These findings support theories suggesting that engaging in physical activity may be a healthy externalizing coping mechanism for dealing with a strained marital relationship (Salmon, 2001). Moreover, spousal strain in the form of critiques, demands, and disagreements may center around the other spouse critiquing one's health behaviors, which may create strain in the relationship but still lead one to engage in healthier behaviors such as physical activity (Umberson, 1992; Xu et al., 2016). There were no significant interactions of marital strain by age or gender suggesting that the relationship between marital strain and physical activity was similar for men and women and across the life course, which did not support part of Hypothesis 3 predicting moderation of both marital support and strain by age and gender. Although our results are in line with some previously theorized outcomes, future studies could push forward to expand the current theoretical frameworks to focus on determining the motivation for increased physical activity. Physical activity may be both a coping mechanism for marital strain, as well as the outcome of marital strain motivators. Additional models taking into account the cause and context of marital strain may be useful for further elucidating the marital strain-physical activity relationship.

Although Hypothesis 3 (about moderation by age and gender) was not supported in terms of marital strain, it was supported in terms of marital support. Greater emotional support from spouses became increasingly important for the walking trajectories of men as they aged, but not women. Trajectories of walking diverged such that men lacking marital support decreased their

walking frequency as they aged while men experiencing high levels of marital support increased their walking frequency as they aged. Men are often on the receiving end of encouragement and regulation of their health behaviors by their spouse (Umberson, 1992), so perhaps receiving emotional support from their spouse encourages men to engage in the healthy activity of walking, which may be more accessible than high-intensity exercises as they age. In addition, walking is a form of physical activity that easily affords partners opportunities to engage in conversation and emotional support, which may also foster increased physical activity through receipt of support and perceptions of accountability. Further research is needed to explore potential reciprocal relationships between receipt of emotional support and walking frequency. Our findings suggest an important opportunity for spouses to engage with their partner, providing more emotional support, with implications for their partner's health behaviors and ultimately their health.

Findings from this study should be interpreted in the context of several limitations. First, physical activity measures were all self-reported, and the measures left room for the respondents' interpretation – both in terms of what constitutes "active sports or exercise" and how much activity constitutes "sometimes", "often", etc. Utilizing objective physical activity measures in future research would enable researchers to obtain more precise physical activity data from participants. Moreover, average physical activity levels were rather low in this study. Although low physical activity levels reflect national trends, different measures of physical activity may identify different forms of physical activity (e.g., exercise from leisure activities versus labor) that may play important roles in health. Second, it is possible that respondents were married to different people at different waves; however, because marital quality is time-varying, measures of marital quality match with the spouse they had at each age for which they contributed data. Third, we examined married individuals, but a dyadic analysis of married couples could examine the impact of

concordance versus discordance between ratings of marital quality between spouses, including whether both spouses rated their marital quality particularly high or low. Actor-partner models could examine whether one's partner's marital quality ratings affect one's own physical activity and whether that differs by gender. Fourth, we do not have information on the types of disagreements and conflicts that respondents experienced with their spouse. Perhaps some of these conflicts involved health-related issues, which could have contributed to better health behaviors, but we are not able to test that. Fifth, respondents reported relatively mild levels of marital strain and high levels of marital support on average. Perhaps particularly high levels of marital strain or low levels of support would lead to a different impact on physical activity. Future research could examine whether certain thresholds of support or strain may be more likely to be related to greater physical activity. Moreover, those with particularly high levels of strain and low levels of support may be less likely to remain married and perhaps may be less likely to quickly remarry, limiting their presence in our sample. This issue of selection could limit the generalizability of our findings for those with particularly troubled marriages. Finally, we operationalized marital quality as two dimensions – positive (marital support) and negative (marital strain), but future research could analyze marital quality by focusing on a single scale, marital satisfaction, relationship ambivalence, and so forth.

Conclusion

Lack of physical activity is detrimental to a variety of health outcomes and has even greater implications for families and health care systems as the proportion of older adults increases since physical activity often declines with age (Shaw et al., 2010). This study provides new information on the ways in which marital strain and emotional support from a spouse may contribute to trajectories of physical activity behaviors across the life course and by gender. Marital quality is

multidimensional, and considering both positive and negative dimensions of marital quality enables this study to move the literature forward in better understanding how physical activity levels may change within the marital status rather than between marital statuses. Both marital support and marital strain were related to greater physical activity, pointing to the complex influence of marital relationships. Future research should aim to investigate other factors that may influence physical activity over the course of a marital relationship. Our findings also point to the particular importance of emotional support from a spouse for men's physical activity, with diverging trajectories of walking frequency as they aged for men who experienced high versus low emotional support from their spouse.

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Table 1. Descriptive Statistics for all observations

	Total (N=5728)		Women (N=3062)		Men (N=2666)		
	Mean / %	SD	Mean / %	SD	Mean / %	SD	Sig.
Key Variables							
Marital Support [0-4]	3.21	.86	3.06	.92	3.39	.75	***
Marital Strain [0-4]	1.34	.78	1.39	.81	1.29	.75	***
Exercise [0-3]	1.67	1.14	1.57	1.14	1.79	1.13	***
Walking [0-3]	1.95	1.05	1.97	1.03	1.92	1.06	
Control Variables							
Age [25-90 (top-coded)]	54.03	14.91	54.01	14.68	54.05	15.17	
Women	53.5%	—	—	—	—	—	
White	76.1%	—	76.3%	—	75.8%	—	
Education [0-17 years]	12.63	2.91	12.53	2.70	12.75	3.12	**
Household income [1-10]	6.48	2.55	6.29	2.57	6.68	2.50	***
Wealth [1-7]	2.51	1.72	2.49	1.70	2.53	1.74	
Employed	59.9%	—	51.7%	—	69.4%	—	***
Remarried	29.0%	—	28.8%		29.3%	—	
Activities limited by health [0-4]	0.71	1.10	0.78	1.13	0.64	1.06	***
Depressive Symptoms [0-21]	3.52	3.54	3.79	3.73	3.21	3.29	***
Self-Rated Health [1-5]	3.57	1.04	3.51	1.04	3.64	1.02	***
# Chronic Conditions [0-8]	1.03	1.15	1.13	1.19	0.92	1.09	***

*$p < .05$, **$p < .01$, ***$p < .001$ for significant differences between men and women.

Table 2. Odds Ratios from Multilevel Ordered Logistic Regression Models of the Relationship between Marital Quality and Frequency of Exercise

VARIABLES	Model 1	Model 2
Marital Support	1.098*	1.053
	[1.003 - 1.203]	[0.906 - 1.223]
Marital Strain	1.159**	1.135
	[1.050 - 1.280]	[0.972 - 1.326]
Age	0.974***	0.973
	[0.968 - 0.980]	[0.936 - 1.011]
Female	0.641***	0.532
	[0.540 - 0.761]	[0.241 - 1.174]
Age*Support		0.999
		[0.990 - 1.008]
Age*Strain		1.000
		[0.991 - 1.009]
Age*Female		1.008
		[0.959 - 1.060]
Female*Support		1.101
		[0.896 - 1.353]
Female*Strain		1.036
		[0.854 - 1.258]
Age*Female*Support		0.996
		[0.984 - 1.008]
Age*Female*Strain		1.010
		[0.998 - 1.023]
Control Variables		
White	1.063	1.061
	[0.872 - 1.295]	[0.870 - 1.293]
Education	1.200***	1.199***
	[1.160 - 1.241]	[1.159 - 1.241]
Income	1.023	1.023
	[0.990 - 1.057]	[0.990 - 1.057]

Wealth	1.102*** [1.043 - 1.163]	1.104*** [1.045 - 1.166]
Employed	0.700*** [0.594 - 0.824]	0.695*** [0.590 - 0.819]
Remarried	1.110 [0.928 - 1.329]	1.119 [0.934 - 1.340]
Activities Limited	0.929 [0.863 - 1.001]	0.930 [0.864 - 1.001]
Depressive Symptoms	0.966** [0.945 - 0.986]	0.967** [0.946 - 0.987]
Self-Rated Health	1.463*** [1.350 - 1.584]	1.465*** [1.352 - 1.587]
# Chronic Conditions	1.020 [0.950 - 1.095]	1.016 [0.946 - 1.091]
AIC	14219.58	14216.49

Note: N=5,728 observations embedded within 1,934 respondents.
*** p<0.001, ** p<0.01, * p<0.05

Table 3. Odds Ratios from Multilevel Ordered Logistic Regression Models of the Relationship between Marital Quality and Frequency of Walking

VARIABLES	Model 1	Model 2	Model 3: Women	Model 4: Men
Marital Support	1.119* [1.021 - 1.227]	1.250** [1.080 - 1.447]	1.071 [0.945 - 1.213]	1.231** [1.060 - 1.428]
Marital Strain	1.164** [1.053 - 1.288]	1.160** [1.049 - 1.283]	1.261*** [1.100 - 1.445]	1.057 [0.910 - 1.228]
Age	1.008* [1.002 - 1.015]	0.979 [0.950 - 1.010]	1.013 [0.990 - 1.038]	0.975 [0.946 - 1.005]
Female	1.114 [0.930 - 1.334]	1.658 [0.904 - 3.042]		
Age*Support		1.012** [1.004 - 1.021]	0.996 [0.989 - 1.003]	1.011** [1.003 - 1.020]
Age*Female		1.028 [0.991 - 1.067]		
Female*Support		0.851 [0.712 - 1.017]		
Age*Female*Support		0.985** [0.974 - 0.996]		
Control Variables				
White	1.060 [0.861 - 1.304]	1.083 [0.881 - 1.331]	1.219 [0.912 - 1.630]	0.967 [0.721 - 1.296]
Education	1.088*** [1.051 - 1.126]	1.092*** [1.055 - 1.130]	1.119*** [1.064 - 1.178]	1.074** [1.025 - 1.124]
Income	1.008 [0.974 - 1.042]	1.002 [0.969 - 1.036]	1.010 [0.965 - 1.058]	0.994 [0.946 - 1.045]
Wealth	1.015 [0.958 - 1.075]	1.017 [0.960 - 1.077]	1.010 [0.929 - 1.097]	1.018 [0.940 - 1.102]
Employed	0.755** [0.638 - 0.894]	0.769** [0.650 - 0.910]	0.814 [0.655 - 1.012]	0.706* [0.540 - 0.923]
Remarried	0.913	0.909	0.936	0.904

	[0.756 - 1.104]	[0.753 - 1.097]	[0.719 - 1.218]	[0.691 - 1.182]
Activities Limited	0.866***	0.866***	0.792***	0.952
	[0.804 - 0.934]	[0.804 - 0.934]	[0.715 - 0.877]	[0.853 - 1.063]
Depressive Symptoms	0.958***	0.957***	0.937***	0.985
	[0.937 - 0.979]	[0.937 - 0.978]	[0.911 - 0.965]	[0.953 - 1.018]
Self-Rated Health	1.167***	1.170***	1.106	1.232***
	[1.077 - 1.265]	[1.080 - 1.268]	[0.987 - 1.238]	[1.099 - 1.380]
# Chronic Conditions	0.976	0.982	0.949	1.026
	[0.908 - 1.050]	[0.913 - 1.056]	[0.861 - 1.046]	[0.919 - 1.146]
AIC	14020.06	13996.69	7336.79	6649.61
Observations	5,728	5,728	3,062	2,666
Number of individuals	1,934	1,934	1,067	867

*** p<0.001, ** p<0.01, * p<0.05

Figure 1. Men's Frequency of Walking by Marital Support Across Age