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Functional Limitations and Psychological Distress: Marital Status as Moderator

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Abstract

This research examines how marital status modifies the relationship between functional limitations and two aspects of psychological distress—depression and anger. Analyses of a multiwave national probability survey show that marriage weakens the relationship between functional limitations and depression, but this moderation is specific to older men. Functional limitations are not significantly related to anger once time-stable confounds are comprehensively controlled, and this association does not differ by marital status. This research shows that marriage may benefit mental health by preventing the deleterious effects of chronic stressors, but marital status intersects with additional social statuses and a life course context in creating these modifying effects. In addition, research that does not consider both internalizing and externalizing mental health outcomes and comprehensively take time-stable confounds into account may present an incomplete depiction of the mental health consequences of stress and social arrangements.

Keywords

anger, depression, life course, selection processes, stress, physical limitations

A substantial amount of research shows that functional limitations are related to greater levels of psychological distress (e.g., Jang et al. 2005; Schnittker 2005; Yang and George 2005), and longitudinal research demonstrates that the contribution of reverse-causation to this relationship is minimal (e.g., Gayman, Turner, and Cui 2008; Ormel et al. 2002; Turner and Noh 1988; Yang 2006). However, sociological perspectives on mental health underscore how social statuses condition each aspect of the stress process (Pearlin 1999). This point is particularly relevant when examining the mental health consequences of physical limitations, because a number of core social statuses have been shown to condition the relationship between functional limitations and psychological distress (e.g., Jang et al. 2008; Mandemakersa and Monden 2010; Schieman and Plickert 2007).

Surprisingly, though, little research has examined whether marital status conditions the effects of physical limitations on psychological distress. This is surprising because studies consistently show that the married possess lower levels of psychological distress than the nonmarried across a variety of outcomes (e.g., Simon 2002; Williams 2003). Research seeking to explain these differences has typically examined the economic, social, and psychological resources that marriage may provide (e.g., Bierman, Fazio, and Milkie 2006). However, some research also suggests that the married gain an advantage in mental health over the nonmarried through protection from the

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effects of stressors (e.g., Kessler and Essex 1982). In this research, we therefore examine whether one way that marriage is beneficial for mental health is by weakening the deleterious effects of functional limitations.

Research on functional limitations and psychological distress has also urged researchers to consider the ways that multiple contexts intersect to shape this relationship (Schieman and Plickert 2007). This is particularly important to take into account when examining the moderating function of marital status because the benefits of marriage for mental health may accrue differently for men and women, depending on the type of mental health outcome being considered (e.g., Simon 2002). Research also indicates that the importance of social resources for preventing the effects of functional limitations on psychological distress varies across the life course (Bierman and Statland 2010). Together, then, this research suggests that gender and the timing of functional limitations in the life course are additional contexts that will modify the extent to which marriage weakens the mental health consequences of functional limitations.

Based on these arguments, this research uses a national longitudinal data set to examine how marital status moderates the relationship between functional limitations and psychological distress, as well as how gender and timing intersect to shape these moderating effects. In addition, we use recent innovations in latent variable modeling to comprehensively control for time-stable influences, thereby helping to ensure that factors selecting individuals into marriage or functional limitations are not responsible for relationships with mental health. In the following, we describe in greater detail how functional limitations are likely to influence psychological distress, as well as how marital status may modify these effects independently and in concert with gender and timing in the life course.

BACKGROUND

Functional Limitations, Psychological Distress, and Marital Status

Functional limitations can lead to increases in psychological distress for a number of reasons. Functional limitations often limit or require adaptation to a number of common everyday activities, thereby resulting in "a fundamental reorientation to daily functioning and renegotiation of participation in the social world" (Bierman and Statland 2010:631). The decreased ability to live actively and independently can create changes in professional and leisure roles (e.g., Brown and Warner 2008; Choi et al. 2007; Kelley-Moore and Ferraro 2001), and severing these roles is likely to lead to a loss of participation in social activities (Reitzes, Mutran, and Pope 1991). These losses may not only influence psychological well-being directly (Reitzes et al. 1991), but may also lead to losses in perceived social support (e.g., Taylor and Lynch 2004; Yang 2006). Bereft of social support to help surmount obstacles posed by functional limitations, individuals with these limitations are likely to feel less able to control and manage their lives, thereby leading to decreased mastery, and also feel less desired and valued by others, which will negatively influence self-esteem (e.g., Mirowsky 1995; Nosek et al. 2003; Reitzes and Mutran 2006).

The presence of a marital partner is likely to be particularly important for helping prevent the effects of physical limitations on many of these mechanisms. A hierarchical-support model, which uses relationship primacy to identify the sources most likely to be preferred when support is needed among individuals with functional limitations, suggests that spouses are at the forefront of providing support (Cantor 1989; Cantor and Brennan 2000; Messeri, Silverstein, and Litwak 1993). Similarly, based on socioemotional selectivity theory, Mancini and Bonanno (2006) argue that the marital relationship may be increasingly important for psychological distress as individuals experience a greater need for closeness commensurate with increases in functional disability. A task-specific model of support clarifies how the marital partner may be particularly important for individuals encountering functional limitations. This model notes that, in addition to being a resource for companionship, services provided through the marital dyad are likely to match quite closely to the obstacles encountered through physical limitations (Messeri et al. 1993). Essentially, marriage helps to create a "social arena of care" through which the marital partner assists in tasks that pose obstacles due to physical limitations (Bierman 2009:426; Bould 2005). Moreover, within marriages, there are "established patterns of responsibilities and commitments" (Schieman and Taylor 2001:470), suggesting that this social arena of care may persist regardless of the level

of emotional intimacy within the marriage. The marital partner therefore bolsters social support and helps to surmount difficulties posed by physical limitations that limit social engagement. The support provided by the marital partner can also reinforce a sense of confidence and self-assurance, thereby reinforcing mastery and self-esteem (Ross 1991).

Although there is little research examining how marital status moderates the effects of functional limitations on mental health, research does indicate that the married tend to report greater self-esteem and mastery (Cotten 1999), lower levels of loneliness and isolation (Windle and Woods 2004), greater levels of perceived social support, and greater integration into social networks (Jang et al. 2002; Turner and Marino 1994). In addition, a few studies have examined whether marital status modifies the relationship between additional stressors and psychological distress. For example, Kessler and Essex (1982) demonstrated that stressors associated with finances, housework, and parenting were more weakly related to depression among the married. Similarly, Simon (1998) indicated that parental strain was more strongly related to depression among the nonmarried than the married, although this moderation was limited to fathers. In addition, Ellison and Lee (2010) examined a less commonly studied stressor, a troubled relationship with God, and found that this stressor was more weakly related to a general measure of psychological distress among the married. All of these studies are similar, though, in that they are analyses of cross-sectional data, and such analyses may produce spurious results because selection factors that influence both marital status and mental health are not addressed. One exception to this pattern is a study by Bierman (2009), who used a longitudinal study to demonstrate that neighborhood disorder was related to increases in symptoms of depression only among the nonmarried. However, Bierman (2009) specifically examined older adults, leaving open the question of how the moderating effects of marital status may vary across the life course. Thus, although the moderating effects of marital status have seldom been examined in the literature, a pattern is observed in which the married are less deleteriously influenced by chronic stressors than the nonmarried. Research seldom considers multiple outcomes in examining these moderating effects, though, and a reliance on cross-sectional research designs precludes taking into account factors that may select individuals into marriage. As will be described in the following, both of these issues are important to address when examining marital status and mental health.

Differences in Moderation by Gender

Research on functional limitations and distress has primarily examined depression as an indicator of distress, finding a positive relationship between limitations and change in depression (e.g., Yang 2006). However, research classifies depression as an "internalizing" aspect of psychological distress in that it is inwardly focused. This is distinct from a set of emotions that are considered "externalizing" because they are outwardly focused, such as anger (Lucas and Gohm 2003; Nolen-Hoeksema and Rusting 1999). Despite these differences, the limited longitudinal research also indicates a significant and positive relationship between physical limitations and change in anger (e.g., Milkie, Bierman, and Schieman 2008).

Distinctions between internalizing and externalizing outcomes are important to take into account because some research shows that the mental health advantage of marriage may be gender specific, with women more likely to benefit for internalizing aspects of distress and men more likely to benefit for externalizing aspects of distress (Simon, 2002; see, though, Bierman et al. 2006; Williams 2003). Furthermore, men and women often exhibit stress responses in distinct patterns. Men are more likely to exhibit externalizing aspects of distress in response to stressors, and women are more likely to exhibit internalizing symptoms in response to stressors (Aneshensel, Rutter, and Lachenbruch 1991; De Coster 2005). These patterns in turn suggest that marital status will be more likely to moderate a relationship between physical limitations and depression for women but moderate a relationship between physical limitations and anger for men.[1]

It is also possible that the moderating effects of marital status persist across outcomes but are specific to one gender. Research points to the presence of a "his and hers" marriage, with marriage more beneficial for the well-being of men than women (Kiecolt-Glaser and Newton 2001). These inequities are likely to extend to the provision of support and care. Incongruence between husbands' caregiving and the feminized caregiving role will likely mean that husbands are less

prepared to fulfill a caregiving role or are less tolerant of this role (Allen 1994; Katz, Kabeto, and Langa 2000; Stoller and Cutler 1992). This argument is supported by evidence indicating that among older adults with physical limitations, substantially more married men reported receiving care from a spouse than married women (Katz et al. 2000). Similarly, Allen (1994) found that caregiving wives reported providing twice the amount of assistance to a spouse as caregiving husbands. Furthermore, beyond instrumental support, wives are likely to be husbands' main source of emotional support, but wives have a greater tendency to seek this type of support from outside the marriage (Phillipson 1997). This research therefore suggests that wives may be of greater assistance when husbands experience limitations than are husbands when wives experience limitations. Consequently, marriage may prevent the effects of functional limitations on psychological distress more strongly for men than women regardless of the mental health outcome being examined.

Functional Limitations and Marital Status in a Life Course Context

A life course perspective emphasizes that the consequences of important experiences depend on the timing of these experiences in the life course (Elder, Johnson, and Crosnoe 2003). Developments in sociological conceptions of stress and mental health in turn suggest that stressors are one type of life course experience for which timing is important to consider (Pearlin and Skaff 1996). Timing is especially important to consider when examining physical limitations because research demonstrates that social resources intersect with the timing of functional limitations to shape how these limitations are related to psychological distress (Bierman and Statland 2010). The timing of functional limitations is likely to create differences in the moderating effects of marital status because aging is associated with a variety of transitions that may diminish social connections. These include not only the severing of leisure and professional roles but also a decrease in the size of one's social network and the frequency of interaction within one's social network (Ajrouch, Antonucci, and Janevic 2001; Due et al. 1999; Morgan 1988). The diminution of alternative social connections will strengthen the importance of the social support provided by the marital partner when older adults face functional limitations. Therefore, the timing of functional limitations in the life course may provide a crucial context for strengthening the modifying effects of marital status among older adults.

The timing of physical limitations is also important to take into consideration because gender differences in trajectories of social resources are likely to structure differences in the degree to which men and women utilize the marital partner in late life. Feminine gender-normative emphases will lead women to more intensively cultivate interpersonal relationships across social roles (Kort-Butler 2009), accumulating over the life course into support structures of greater extensivity in late life (Windsor and Butterworth 2010). These patterns are illustrated by research showing that although both men and women report increasing isolation across the life course, by late life men are significantly more likely than women to report a lack of frequent contact with friends, family, and voluntary organizations (Due et al. 1999). Similarly, additional research shows that men tend to report social isolation earlier in late life than do women (Cloutier-Fisher and Kobayashi 2009). These findings suggest that men's greater dependence on the marital partner for support may be particularly acute in late life. This possibility is underscored in research on couples showing that although there is an age trend in which partner relationships are seen as more supportive among older adults, this trend is stronger among men (Windsor and Butterworth 2010). Hence, if marital status modifies the consequences of functional limitations more strongly for men, this is particularly likely to be observed among older adults.

Summary of Aims

In summary, this research has three main aims. The first is to examine how marital status moderates the relationship between functional limitations and psychological distress. The second is to examine how gender and timing of functional limitations in the life course intersect with marital status to shape these moderating effects. The third is to examine if the moderating effects of marital status differ by these additional contingencies depending on whether an internalizing or externalizing indicator of distress is examined.

METHOD

Sample

Data for this study are derived from the survey of Aging, Status, and Sense of Control (ASOC), a three-wave panel study based on a national probability sample of English-speaking adults from the United States.[2] The ASOC was a telephone-based survey begun in 1995 with respondents gathered through random digit dialing, and at baseline 71.6 percent of contacted and eligible respondents completed interviews. The ASOC is particularly well suited for the current research because the survey includes an 80 percent oversample of individuals age 60 and older, thereby facilitating the study of how processes of stress modification differ within subgroups of older and younger adults. With weighting to take this oversampling into account, the baseline ASOC generally matches the U.S. population on a number of characteristics, including not only marital status, but also race, gender, household size, education, and income. Because baseline age is controlled in the current research, weights should not be necessary (Winship and Radbill 1994), and ancillary comparisons of analyses with and without weights demonstrated similar findings for moderating effects. Following the baseline survey, respondents were interviewed two additional times three years apart, in 1998 and 2001. Baseline sample size for respondents with valid age scores was 2,581, including 1,100 respondents aged 60 and over.[3] Over the course of the study, 907 respondents participated in all three waves, 471 respondents participated in the first two waves, 237 in the first and third waves, and 966 in the first wave. Within this study, all three waves of data in the ASOC are utilized, and methods that take advantage of the longitudinal nature of these data, as well methods used to address attrition and missing data, will be described in the statistical analyses section.

Focal Measures

Psychological distress. Two measures of distress were used in this study, depression and anger. Depression was measured using a seven-item adaptation of the Center for Epidemiological Studies's Depression Scale (CES-Dm; Ross and Mirowsky 2006). Symptoms on this scale include: had trouble getting to sleep or staying asleep, felt that everything was an effort, felt you just couldn't get going, had trouble keeping your mind on what you were doing, felt sad, felt lonely, and felt you couldn't shake the blues. Respondents indicated the number of days in the previous week they had experienced each symptom from 0 to 7, and depression scores were a mean of responses to the seven items (Cronbach's alpha was between .8027 and .8172 for the three waves). Anger was measured using the mean of three items with the same response scale: felt annoyed with things or people, felt angry, and yelled at someone (Cronbach's alpha .7072 to .7155). Ross and van Willigen (1997:281) indicate that "these symptoms represent escalating anger from annoyance to anger to yelling." The measures therefore indicate mean number of days of depressive symptoms and anger, respectively.

Functional limitations. Functional limitations were measured using a scale in which respondents indicated difficulty performing five common tasks: climbing stairs, kneeling or stooping, lifting or carrying objects weighing less than 10 pounds, household work (e.g., preparing meals or cleaning house), and shopping or getting around town. Respondents indicated difficulty performing each task from a scale of 1 (*no difficulty*) to 3 (*a great deal of difficulty*). Principal component analyses of the items at each wave indicated one component with an eigenvalue above 1, accounting for over 60 percent of the variance in the items, and all items loaded on components above .70. The mean of responses to the five items at each wave was therefore used as the measure of functional limitations (Cronbach's alpha .8166 to .8463).

Marital status. Although some research splits the nonmarried into different types (e.g., Simon 2002; Williams 2003), the focus of this research is on how the married differ from the nonmarried in the effects of functional limitations, not the way in which these differences may vary across different types of nonmarried groups. Furthermore, the sample size did not permit adequate cell sizes for each of the nonmarried groups within the gender and age subsamples. Marital status was therefore measured using a dichotomous indicator for which 0 = nonmarried and 1 = married. In addition, a small number of people across the survey indicated cohabiting (N = 76), and because this was too small a group to examine analytically, these respondents were dropped from analyses.

Gender. Gender was coded so that 0 = men, 1 = women.

Control Measures

Time-stable background social statuses likely associated with functional limitations, marital status, and psychological distress used as covariates included race (1 = non-white, 0 = white) and baseline age. In addition, education, work status, and income at each wave were included as time-varying controls. Education was measured in terms of highest grade or year of school completed, work status was measured through a dichotomous indicator in which 0 = working for pay and 1 = not working, and income was measured on an ordinal scale of 1 (less than $10,000) to 8 ($100,000 or more). Additional time-varying health problems that may covary with functional limitations were controlled with a common measure of self-rated health in which 1 = poor or very poor health and 0 = satisfactory, good, or very good health. To control for alternative sources of support within the home, number of people in the household were included as a time-varying covariate.

Descriptives of all study variables are displayed in Table 1.

Statistical Analyses

A major obstacle in examining mental health and marital status is the issue of whether selection factors could influence the observed relationships. For example, adverse life course events have been associated with not only greater likelihood of being nonmarried but also increased risk of physical limitations and mental health problems in adulthood (Amato 1996; Bowen and González 2010; Chartier, Walker, and Naimark 2010; Colman and Widom 2004; Green et al. 2010; Horwitz et al. 2001). If they are not comprehensively taken into account, these time-stable factors could therefore lead to a spurious association in the focal relationships for this research. Some individuals may also have greater time-stable tendencies toward worse mental health that not only increase the likelihood of being nonmarried (Wade and Pevalin 2004), but also decrease coping ability when faced with chronic stressors, thereby giving an appearance that marital status moderates the consequences of physical limitations.

These issues can be addressed through a combination of random and fixed effects models. Random effects models are useful when analyzing longitudinal data because these models adjust standard errors and statistical tests for repeated measurement of the same individuals over time (Wooldridge 2002). However, a drawback to random effects models is that unobserved time-stable confounds may continue to influence observed relationships, possibly leading to spurious results. An alternative to random effects models are fixed effects models. Fixed effects models also adjust statistical tests for repeated measurements, but go further, and partial out the influence of *all* time-stable influences, *even if these time-stable influences are not directly observed* (Allison 2009). Fixed effects models therefore use longitudinal data to rule out all sources of spuriousness due to time-stable confounds while still adjusting statistical tests for repeated measurement.

Fixed effects models can be estimated through a latent variable approach (Allison 2009). In this methodology, a set of observations for the same outcome across different time points is used to estimate a latent variable. For example, the three measures of depression across waves are used as indicators for a latent variable that represents time-stable influences; each loading for the latent variable is set to 1 to represent the consistent influence of unchanging conditions on the outcome. When the latent variable is allowed to covary with a time-varying predictor, the result is a fixed effects coefficient because the influence of all time-stable factors is partialled from the relationship. Time-stable predictors cannot covary with the latent indicator because they are collinear with underlying time-time influences; however, time-stable predictors can be retained in the model simply by disallowing their covariance with the latent variable, and the coefficients associated with these predictors are analogous to coefficients in random effects models.

A latent variable approach to these models is particularly useful because it provides multiple indicators of model fit and permits the use of full-information maximum likelihood (FIML) estimation techniques, which provide unbiased, efficient parameter estimates in the presence of missing data (Enders 2006). Accurate estimation with FIML depends on the assumption that data are "missing at random" (MAR), and the MAR assumption is based in part on the inclusion of factors that predict missingness (Enders 2006). Because self-rated health has been shown to substantially predict mortality after controlling for functional status and depression (DeSalvo et al. 2005), the inclusion of self-rated health in the

Table 1. Descriptive Statistics of Study Variables

	Total sample		Older sample men		Older sample women		Younger sample men		Younger sample women	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Time 1										
Depression	0.911	1.307	0.675	1.106	0.988	1.392	0.824	1.213	1.037	1.378
Anger	1.396	1.561	0.599	0.973	0.812	1.170	1.716	1.607	2.065	1.699
Functional limitations	1.250	0.408	1.284	0.418	1.460	0.504	1.114	0.263	1.159	0.320
Married	0.587	0.493	0.716	0.452	0.393	0.489	0.594	0.491	0.615	0.487
Women	0.565	0.496	—	—	—	—	—	—	—	—
Minority race	0.131	0.338	0.075	0.264	0.087	0.283	0.167	0.373	0.170	0.376
Age	52.406	18.631	69.938	6.960	71.247	7.558	38.304	10.798	38.135	10.367
Education	13.271	2.749	13.286	3.237	12.353	2.876	13.740	2.410	13.689	2.399
Income	4.076	2.003	4.142	1.993	3.006	1.785	4.596	1.916	4.387	1.944
Not working	0.484	0.500	0.770	0.421	0.815	0.388	0.158	0.365	0.312	0.464
Poor self-rated health	0.060	0.238	0.084	0.277	0.102	0.303	0.021	0.142	0.044	0.205
Number of people in household	2.528	1.444	2.060	1.207	1.688	0.957	2.933	1.489	3.114	1.447
Time 2										
Depression	0.824	1.244	0.771	1.325	0.890	1.235	0.647	1.068	0.939	1.325
Anger	1.214	1.484	0.597	0.947	0.701	1.159	1.493	1.517	1.832	1.670
Functional limitations	1.286	0.435	1.344	0.473	1.493	0.509	1.117	0.255	1.193	0.360
Married	0.621	0.485	0.741	0.439	0.377	0.485	0.696	0.461	0.728	0.446
Women	0.585	0.493	—	—	—	—	—	—	—	—
Minority race	0.099	0.299	0.072	0.259	0.065	0.247	0.125	0.332	0.126	0.332
Age	53.602	17.547	68.978	6.359	70.616	7.403	39.872	10.650	39.701	10.089
Education	13.512	2.728	13.594	3.279	12.616	2.753	13.926	2.313	13.992	2.459
Income	4.400	2.020	4.270	1.984	3.169	1.779	5.064	1.935	4.929	1.824
Not working	0.501	0.500	0.819	0.386	0.867	0.340	0.150	0.357	0.262	0.440
Poor self-rated health	0.065	0.247	0.099	0.299	0.096	0.295	0.030	0.172	0.046	0.209
Number of people in household	2.500	1.386	2.009	1.016	1.740	1.070	2.988	1.414	3.109	1.361

(continued)

Table 1. (continued)

	Total sample		Older sample men		Older sample women		Younger sample men		Younger sample women	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Time 3										
Depression	0.927	1.271	0.800	1.072	1.160	1.434	0.692	1.120	0.955	1.282
Anger	1.100	1.303	0.508	0.847	0.750	1.121	1.292	1.352	1.672	1.403
Functional limitations	1.347	0.458	1.371	0.448	1.572	0.516	1.154	0.305	1.252	0.402
Married	0.618	0.486	0.737	0.442	0.369	0.483	0.710	0.455	0.731	0.444
Women	0.585	0.493	—	—	—	—	—	—	—	—
Minority race	0.090	0.286	0.061	0.240	0.066	0.249	0.113	0.317	0.114	0.318
Age	54.288	16.777	68.919	6.362	69.539	6.783	40.541	10.012	40.230	9.870
Education	13.686	2.724	13.743	2.958	12.826	2.868	14.213	2.416	14.125	2.434
Income	4.731	2.100	4.339	1.887	3.431	1.869	5.768	1.822	5.321	1.944
Not working	0.530	0.499	0.830	0.377	0.898	0.303	0.161	0.368	0.256	0.437
Poor self-rated health	0.081	0.273	0.133	0.340	0.109	0.313	0.047	0.211	0.048	0.214
Number of people in household	2.420	1.348	1.974	0.956	1.601	0.795	2.996	1.413	3.078	1.393

models helps to ensure that missingness due to mortality does not bias these analyses.

A latent variable approach to fixed effects models is also important for the current research because it facilitates the use of a multigroup model (Kline 2005). In a multigroup model, the same model is estimated for two groups and constrained to be equal across the groups; a significant improvement in model fit when constraints are released indicates a difference in relationships between groups (Mann, Rutstein, and Hancock 2009). A multigroup model therefore allows us to take advantage of the oversampling of older adults within the ASOC by examining if moderation by marital status differs between older and younger adults.[4]

Analyses are therefore carried out through several steps. For each outcome, we first examine the independent relationship with functional limitations and marital status in a random effects model. We then examine a fixed effects model of the same relationships to demonstrate the extent to which time-stable factors bias estimation of these relationships. Following this, we test an interaction between marital status and limitations to examine whether marital status moderates the relationship between functional limitations and distress, and then test a three-term interaction between limitations, gender, and marital status to examine whether the moderating effect of marital status differs by gender. Finally, we use a multigroup model to examine whether this three-term interaction differs between older and younger adults.

All models were estimated with Mplus 5.21 using standard errors and chi-square statistics that are robust to violations of normality, and preliminary analyses of serial correlation suggested adjusting for correlated errors between Waves 1 and 2 for both outcomes; preliminary analyses also indicated that model fit was significantly improved by freeing the error variances for anger across waves, although focal results were substantively the same regardless of whether the error variances were constrained.

RESULTS

Physical Limitations and Depression

Table 2 presents the results for models of depression, and the model fit indices for all models indicate acceptable fit (Kline 2005). Model 1 is a random effects model that corrects statistical tests for repeated observations and includes a number of controls, but even with these adjustments there is a significant relationship between limitations and depression. This relationship is also relatively substantial—a one-unit increase in limitations is related to almost a day's increase in average depressive symptomology. However, this model does not control for unobserved time-stable factors that may confound this relationship.

Model 2 allows the latent indicator of unobserved time-stable characteristics to covary with each time-varying predictor, thereby holistically controlling for all time-stable confounds. Two important results are observed in this model. First, the change in the chi-square statistics between Models 1 and 2 is significant ($\Delta\chi^2 = 58.15$, $df = 21$, $p < .001$).[5] This indicates that model fit is significantly improved by controlling for unobserved time-stable influences, demonstrating that a fixed effects model is preferable to a random effects model. Second, when these additional time-stable influences are controlled, the coefficient for the relationship between functional limitations and depression decreases over 25 percent. Hence, even after including a number of common controls in Model 1, the relationship between limitations and depression is substantially reduced by holistically controlling for time-stable influences. This result suggests that research on functional limitations and depression may overestimate the strength of this relationship if time-stable confounds are not comprehensively controlled.

Model 3 includes an interaction between marital status and functional limitations. This interaction is not significant, indicating that the relationship between limitations and depression does not vary significantly between the married and nonmarried. In addition, ancillary analyses indicated that this interaction was not significant for either the older or younger adult subgroups. However, this does not indicate whether the moderating effects of marital status differ between men and women. Model 4 tests a three-term interaction between marital status, gender, and functional limitations, and this interaction is not significant, suggesting that there are no significant differences between men and women in the moderating effects of marital status.

Table 2. Association between Functional Limitations and Symptoms of Depression

	Model 1	Model 2	Model 3	Model 4	Model 5	
Focal variables					Younger	Older
Functional limitations	0.958***	0.690***	0.717***	0.942***	0.481	0.907**
	(0.067)	(0.111)	(0.144)	(0.220)	(0.363)	(0.274)
Married	–0.343***	–0.687***	0.626*	–0.379	–1.279*	0.125
	(0.048)	(0.116)	(0.246)	(0.407)	(0.568)	(0.593)
Women	0.057	0.067	0.066	0.265	–1.428*	0.700
	(0.040)	(0.048)	(0.048)	(0.383)	(0.712)	(0.539)
Functional limitations × married			–0.049	–0.395	0.539	–0.824*
			(0.195)	(0.328)	(0.518)	(0.351)
Functional limitations × women				–0.287	1.278*	–0.640*
				(0.283)	(0.631)	(0.315)
Married × women				–0.342	1.812*	–1.421
				(0.514)	(0.831)	(0.754)
Functional limitations × married × women				0.497	–1.411	1.293**
				(0.409)	(0.752)	(0.468)
Control variables						
Minority race	–0.006	0.003	0.004	0.011	0.046	
	(0.067)	(0.076)	(0.076)	(0.077)	(0.075)	
Age	–0.015***	–0.013***	–0.013***	–0.013***	–0.010***	
	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	
Education	–0.031***	–0.003	–0.003	–0.003	0.007	
	(0.008)	(0.023)	(0.023)	(0.023)	(0.022)	
Income	–0.013	–0.001	0.000	0.002	0.015	
	(0.012)	(0.020)	(0.020)	(0.020)	(0.019)	
Not working	0.165***	0.188**	0.183**	0.184**	0.137*	
	(0.045)	(0.068)	(0.068)	(0.068)	(0.067)	
Poor self-rated health	0.845***	0.615***	0.614***	0.620***	0.583***	
	(0.113)	(0.152)	(0.152)	(0.151)	(0.145)	
Number of people in household	0.009	–0.023	–0.023	–0.023	–0.021	
	(0.016)	(0.025)	(0.025)	(0.024)	(0.024)	
χ^2	117.802***	59.283	64.954	86.043*	204.007***	
df	65.000	44.000	49.000	64.000	136.000	
Comparative Fit Index	0.964	0.990	0.989	0.984	0.957	
Root mean square error of approximation	0.018	0.012	0.011	0.012	0.020	
Standardized root mean square residual	0.015	0.009	0.009	0.008	0.013	

Note. Unstandardized coefficients are presented with standard errors in parentheses. With full-information maximum likelihood (FIML), sample size is 2,505.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

Additional tests using a multigroup model showed a more complex set of results, though. A model equivalent to Model 4 was estimated for the younger and older groups, and the coefficients were constrained to be equal between the two groups. When the coefficients for the relevant variables—the interactions and the variables used in the interactions—were released, model fit was significantly improved ($\Delta\chi^2 = 26.76$, $df = 7$, $p < .001$). This improvement was significant regardless of whether the coefficients for the controls were released, and subsequently releasing the coefficients for the controls did not provide significant improvement in model fit. The results of the

Table 3. Association between Functional Limitations and Symptoms of Depression in Older Adults

	Men	Women
Focal variables		
Functional limitations	0.915**	0.306
	(0.270)	(0.156)
Married	–0.043	–1.383**
	(0.557)	(0.461)
Functional limitations × married	–0.772*	0.437
	(0.340)	(0.302)
χ^2	47.179	83.111***
df	47.000	47.000
Comparative Fit Index	0.999	0.934
Root mean square error of approximation	0.003	0.033
Standardized root mean square residual	0.019	0.020

Note. Unstandardized coefficients are presented with standard errors in parentheses. All models include controls in Table 1. With full-information maximum likelihood, N = 401 men, 691 women.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

multigroup model are displayed in Model 5, and this model indicates that the three-term interaction is significant for older adults but not younger adults.

Table 3 helps to explicate this three-term interaction by testing an interaction between marital status and functional limitations separately for older men and older women. This interaction is significant for older men. In addition, because marital status is coded so that a score of zero indicates the nonmarried, the coefficient for functional limitations can be interpreted as indicating that limitations are significantly related to greater levels of depression for nonmarried men. The negative coefficient for the interaction indicates that this relationship is largely diminished for married men. However, the interaction is not significant for older women, and ancillary analyses that removed the interaction indicated that limitations continued to be significantly related to depression for older women ($b = .450$, $p < .01$) and the younger sample ($b = 1.009$, $p < .001$).

Overall, then, these analyses indicate that marital status moderates the relationship between functional limitations and depression, but this moderation is specific to older men. In short, gender and life course context intersect with marital status to shape the relationship between functional limitations and depressive symptoms.

Physical Limitations and Anger

Table 4 presents the results for models of anger. Model 1 is a random effects model showing that independent of controls and adjustment for repeated measurement, limitations are significantly related to greater levels of anger. Although this relationship is not as strong as for depression, a one-unit increase in limitations is still related to over a third a day of anger. This would seem to suggest that functional limitations are robustly related to both internalizing and externalizing aspects of emotional distress, but Model 2 indicates a different story. When the latent indicator of time-stable influences is allowed to covary with all time-varying predictors, model fit is significantly improved ($\Delta\chi^2 = 51.47$, $df = 21$, $p < .001$). However, the relationship between limitations and anger is reduced to nearly zero and is no longer statistically significant, demonstrating that the relationship between functional limitations and anger is spurious and due to covariance with unobserved time-stable confounds.

The relationship between limitations and anger also does not vary significantly between the married and nonmarried, as the coefficient for the interaction between marital status and functional limitations in Model 3 is not significant, and additional analyses indicated that this interaction was not significant for the older or younger subgroups. In Model 4, the three-term interaction between functional limitations, gender, and marital status is not significant, and an ancillary multigroup model indicated that the three-term interaction was not significant for the younger or older subgroups. In short, once time-stable predictors are holistically taken into account, functional limitations are not significantly related to anger. This relationship does not vary by marital status for the sample as a whole, nor is there a moderating effect of marital status that is specific to a gender or age subgroup.

DISCUSSION

Thirty years ago, Kessler and Essex (1982) pointed out that marriage may provide mental health benefits by preventing the effects of stress on psychological distress. Surprisingly, though, relatively little subsequent research has explored

Table 4. Association between Functional Limitations and Symptoms of Anger

	Model 1	Model 2	Model 3	Model 4
Focal variables				
Functional limitations	0.357***	0.048	–0.029	–0.057
	(0.062)	(0.103)	(0.129)	(0.229)
Married	–0.124*	–0.121	–0.322	–0.270
	(0.053)	(.092)	(0.231)	(0.345)
Women	0.252***	0.273***	0.274***	0.314
	(0.049)	(0.055)	(0.055)	(0.370)
Functional limitations × married			0.162	0.205
			(0.173)	(0.245)
Functional limitations × women				0.046
				(0.269)
Married × women				–0.090
				(0.467)
Functional limitations × married × women				–0.065
				(0.341)
Control variables				
Minority race	–0.171*	–0.173*	–0.174*	–0.177*
	(0.077)	(0.084)	(0.084)	(0.084)
Age	–0.030***	–0.031***	–0.030***	–0.031***
	(0.002)	(0.002)	(0.002)	(0.003)
Education	–0.012	–0.041	–0.041	–0.041
	(0.009)	(0.027)	(0.027)	(0.026)
Income	–0.008	–0.031	–0.032	–0.029
	(0.014)	(0.023)	(0.023)	(0.023)
Not working	–0.076	–0.149	–0.147	–0.147
	(0.053)	(0.079)	(0.079)	(0.079)
Poor self-rated health	0.204*	0.129	0.128	0.125
	(0.096)	(0.127)	(0.127)	(0.127)
Number of people in household	0.183***	0.104**	0.104**	0.101**
	(0.023)	(0.030)	(0.030)	(0.030)
χ^2	108.947***	58.380*	67.086*	87.077*
df	63.000	42.000	47.000	62.000
Comparative Fit Index	0.971	0.990	0.987	0.985
Root mean square error of approximation	0.017	0.012	0.013	0.013
Standardized root mean square residual	0.016	0.011	0.010	0.008

Note. Unstandardized coefficients are presented with standard errors in parentheses. With full-information maximum likelihood (FIML), N = 2,505.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

this possibility, instead examining how marital status is directly related to psychological distress (e.g., Simon 2002; Williams 2003), as well as the potential reasons for this relationship (e.g., Bierman et al. 2006). However, the current research shows that marital status influences mental health in part by moderating the deleterious consequences of chronic stressors. Even though physical limitations have been shown to have substantial consequences for psychological distress, marital status can still moderate these effects, although both gender and a life course context intersect with marital status to shape these moderating effects.

An important question that this research raises is how marital status creates these moderating effects. Some researchers argue that marital status should be thought of as indicating placement on a continuum of social attachment, which is "a sequence of increasing commitments in adult

relationships" (Ross 1995:131). From this perspective, marital status could be seen to moderate the effects of stress on psychological distress because marriage is a proxy for placement on a high end of social attachment, with consequent degrees of emotional intimacy and support. In this case, then, subsequent studies could more directly examine the means by which social attachment provides greater access to resources that moderate the effects of stress. However, Umberson and Williams (1999) point out that from a classical Durkheimian perspective, marriage is a primary aspect of social integration that is indicative of obligations and constraints even in the absence of feelings of attachment. From this perspective, then, the presence of a marital partner is likely to weaken the effects of a stressor through the obligations that the status of being married creates, as well as constraints on emotional reactions to stress, regardless of the level of closeness in the relationship.

A means of reconciling these perspectives may be provided by the current paradigmatic perspective in the sociology of mental health, the stress process perspective (Pearlin 1999). A stress process perspective delineates multiple pathways by which stressors indirectly influence mental health, arguing that stressors can influence mental health both by creating additional stressors and depleting social and psychological resources. However, the stress process is quintessentially sociological in that social and economic statuses are seen as conditioning these consequences. Based on a stress process perspective, then, marital status can be viewed as a social status that conditions the extent to which stressors indirectly influence psychological distress.

The utility of conceiving of marital status as a social status within the stress process is that this view does not force an artificial definition of marital status as a proxy for resources or an indicator of social integration. For example, functional limitations have been shown to have a powerful influence on the loss of a sense of control (Mirowsky 1995; Yang 2006), but the presence of a marital partner may help prevent a loss of mastery (Bierman 2009). It is likely that both the social attachment and social integration functions of marital status are inextricably interwoven in creating this moderating effect, so that it is fruitless to try to disambiguate their independent contributions. Instead, through a stress process perspective, we more centrally focus on the reasons why marital status modifies the effects of functional limitations on mental health by examining how marital status moderates a loss in psychological resources. Additional research should therefore examine how marital status modifies the indirect relationships between functional limitations and psychological distress and, more broadly, should devote greater attention to examining the stress moderating function of marital status.

Recent conceptualizations of the stress process perspective have also underscored the utility of combining this perspective with a second perspective, a life course perspective (Pearlin 2010; Pearlin and Skaff 1996). A life course perspective guides us to view the experience of stress within the context of the social shifts and transitions that occur over the life course. These transitions are particularly important to take into account in the case of marital status because aging is associated with a decrease in the size of one's social network and the frequency of interaction within one's social network (Ajrouch et al. 2001; Due et al. 1999; Morgan 1988). Thus, as individuals age, the diminution of alternative social resources is likely to increase the importance and salience of the marital partner when functional limitations occur. At the same time, research suggests that these life course transitions may be substantially different for men and women, as feminine-normative emphases on the cultivation of interpersonal relationships will lead men to experience greater degrees of social isolation in late life than women (Kort-Butler 2009; Windsor and Butterworth 2010). Consequently, when limitations occur in late life, the marital partner is likely to be a particularly important resource for men. Additional research should therefore examine whether the marital partner is especially potent in moderating the effects of stress when individuals have a less extensive or intensive extramarital social support network, as well as whether life course transitions in the content and structure of the social support network alter the extent of the moderating effects of marital status. More broadly, this research suggests that, as future studies examine how marriage prevents the effects of stressors on a loss of resources and the creation of secondary stressors, a more complete understanding of these processes may be gained through attention to the life course context in which these processes function.

It should also be noted, though, that in addition to life course transitions in social support structures, cohort differences may also contribute to

the age-based patterns observed here. Research has noted substantial cohort differences in gendered attitudes toward marital roles, with older cohorts more likely to frame women's roles in terms of nurturing home and family and expecting women to focus on the homemaker role (Ciabattari 2001; Harris and Firestone 1998; Pampel 2011). Consequently, older cohorts have greater expectations than younger cohorts for women to focus on a "kinkeeper" role (Putney and Bengtson 2003), suggesting that the gender imbalance in care in a "his and hers" marriage will be more acute in older cohorts. It is not possible in the current research to discern the way that these cohort patterns contribute to the extent to which age and gender intersect with the moderating functions of marital status. An additional fruitful path for future research is therefore to use methods that differentiate age and cohort effects to examine how cohort differences in gender ideology contribute to differences in dependencies on the marital partner as a support resource.

However, marital status does not appear to moderate the effects of limitations equally across different aspects of distress, as moderating effects were observed for the internalizing outcome of depression but not the externalizing outcome of anger. Most likely, marital status did not moderate the relationship between functional limitations and anger because once time-stable confounds were holistically taken into account, limitations were not significantly related to anger. That marital status moderated this relationship for depression but not anger underscores the importance of considering multiple outcomes when examining how social arrangements shape mental health (Aneshensel 2005). A study focusing only on depression would have presented a more robust depiction of both the mental health consequences of physical limitations and the moderating capabilities of marital status than is actually the case. However, before it is assumed that the relationship between functional limitations and anger is entirely spurious, this finding should be replicated with additional studies that employ fixed effects models or similar techniques.

One important question that this article did not address is how the mental health effects of functional limitations differ by marital functioning, and in particular how these moderating functions may vary depending on the amount of instrumental and emotional support that is available within the marriage. Although this is an important question, the dependency and need for emotional support that functional limitations create require specific measures of supports and conflicts within the marriage across a range of activities to appropriately examine these moderating effects (e.g., Marks and Choi 2008). Furthermore, the results of the current research suggest that a full response would require examination of how marital supports and conflicts intersect with gender and timing in the life course to moderate the effects of functional limitations. However, if the social integration function of marital status facilitates the moderation effects observed in the current research, it is also possible that marital conflicts and emotional closeness provide few additional moderating effects. Clearly, this question should be given additional attention in future research.

It should also be noted that this research examined aging within two broad categories of age 60 and older and less than age 60. The oversampling of the ASOC data of adults aged 60 and older facilitated this strategy, but it was also an analytic necessity. The alternative to a multigroup approach would have been four-term interactions, and four-term interactions would not only be uninterpretable but would also have required the inclusion of all combinations of third- and second-order interactions, leading to substantial multicollinearity concerns. A multigroup strategy is therefore uniquely able to place moderation by multiple social statuses within the life course context provided by these data. However, an important question for future research is in examining gradients in the moderating processes studied in this research across ages and cohorts.

CONCLUSION

Marital status has been shown to be a highly consistent indicator of mental health (Umberson and Williams 1999), but the explanations for these differences have primarily concentrated on mediating mechanisms in this relationship. The current research shows that marital status moderates the relationship between some forms of psychological distress and a particularly potent stressor, physical limitations. These results suggest that marital status also contributes to mental health by modifying the effects of stressors. However, the extent to which moderating effects contribute to the mental

health advantage of the married is unlikely to be derived from modifying the consequences of only this stressor. Additional research should therefore examine whether marital status modifies the consequences of a variety of chronic and eventful stressors.

This research also shows that the moderating effects of marital status may hinge on both gender and the timing of the stressor in the life course. It is likely that gender-specific life course trajectories of decreases in social support resources enhance the importance of the marital partner as a resource particularly for men in late life. Research examining how marital status modifies the consequences of additional stressors should therefore carefully consider how a life course context and additional social statuses intersect with marital status to modify these effects. In addition, this research shows that the consequences of physical limitations can vary across outcomes, but these differences may become apparent only once time-stable confounds are comprehensively taken into account. Additional research that does not consider a full range of mental health outcomes and comprehensively take time-stable confounds into account may therefore present an incomplete depiction of the mental health consequences of stress and social arrangements.

NOTES

1. Research has more commonly examined alcohol abuse as an indicator of externalizing when examining gender differences in the mental health advantage of the married (e.g., Simon 2002; Williams 2003). However, anger and depression are arguably more comparable than alcohol abuse and depression, as alcohol abuse requires monetary resources and may stimulate addiction that extends beyond a stress reaction; conversely, just as with depression, anger can be measured as a continuum of affective reactions. These differences are especially important to take into consideration when examining the effects of functional limitations because substance abuse may be a means of self-medicating the pain that is often the consequence of functional limitations (Gayman, Turner, and Cui 2008), rather than an indicator of psychological distress.
2. This description is adapted from Mirowsky and Ross (2007), in which additional information on the Aging, Status, and Sense of Control (ASOC) survey can be found.
3. Eighteen respondents did not report sufficient information for age scores at baseline, but 6 of these scores were imputed based on age in subsequent waves. The remaining 12 respondents were dropped from all analyses.
4. Although age could be split in a number of different ways in this research, the oversample of individuals aged 60 provided a natural cut-point to differentiate older and younger adults. Using this age to demarcate the older and younger subsamples is also supported by research showing differences in marital relationships between individuals aged 60 and over and individuals under aged 60 (e.g., Charles et al. 2009; Seider et al. 2009). In addition, dividing the sample in this way is in line with multiple population studies of mental health (e.g., Kessler et al. 2003; Windsor and Butterworth 2010), which commonly use age 60 as the demarcation for older adults. Both previous research and previous practice therefore support using the oversample of adults aged 60 and over as the sample of older adults.
5. Because robust estimation methods are used, differences in the model chi-squares cannot be calculated directly, and an adjustment for the scaling correction factor must be used.

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