



Gender differences in associations between spousal cognitive decline and marital strain: Evidence from the U.S. older couples

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ABSTRACT

Despite extensive research demonstrating how marriage affects health, less is known about how health changes impact marriages, particularly when one spouse's health declines. This study extends the stress process model to dyadic contexts to ask whether and how one spouse's cognitive decline is associated with the other spouse's perceived marital strain, with attention to potential differences by gender. It also examines the influence of social support from family and friends, as well as social engagement and community participation on the dyadic dynamic. We estimated Actor-Partner Interdependence models with data ($N = 620$ couples) from Waves 2 and 3 of the National Social Life, Health, and Aging Project. Our results highlight gender asymmetries in dyadic stress processes. Wives reported higher marital strain when their husbands had dementia, while husbands reported lower marital strain when their wives experienced mild cognitive impairment and dementia. Friend support is associated with lower marital strain for wives whose husbands experience cognitive impairment, while socialization is related to higher marital strain for men whose wives experience cognitive impairment.

The relationship between marriage and health has received substantial attention. However, research has predominantly focused on how marital quality affects health (Haghighi et al., 2024; Huo et al., 2022; Liu et al., 2021; Xu et al., 2016). Far less attention has been paid to the reverse pathway—how health conditions impact marriage. This unidirectional emphasis reflects a broader tendency to position relationship quality as a social determinant of health. However, as families age, understanding how changing health conditions reshape the social relationships that influence health trajectories is increasingly important (Cohen, 2004; House et al., 1988; Umberson et al., 2010).

This study focuses on marital challenges brought by Alzheimer's Disease and Related Dementias (ADRD), one of the most pressing concerns for aging societies (Nichols et al., 2022; World Health Organization, 2017). ADRD encompasses a range of disorders that progress through stages of cognitive impairment, beginning with mild cognitive impairment (MCI) and further advancing to dementia (Shankle et al., 2005). Cognitive impairment extends beyond individual biological processes to reshape social interaction and relationship dynamics, particularly intimate partnerships in late life. Beyond the caregiving demands associated with many other health challenges, cognitive impairment uniquely threatens one's capacity for the maintenance of

shared meanings, reciprocal exchanges, and mutual understanding that characterize marital relationships—potentially transforming the fundamental nature of these partnerships (Evans and Lee, 2014; Gallagher and Stokes, 2021; Roper and Yorgason, 2009). The implications of cognitive health for marital relationships become particularly significant in the context of population aging. As individuals live longer lives, the period of potential exposure to cognitive health challenges within marriages extends, creating prolonged trajectories of relationship adaptation.

The current study extends the stress process model to dyadic contexts to understand the relationship between cognitive health and marital strain within couples. The stress process model posits stressors as determinants of well-being (Pearlin et al., 1981, 2005), and the life course perspective on linked lives suggests that couples are interdependent and one's health conditions influence the well-being of both partners (Elder, 1994, 1998). Accordingly, we theorize that cognitive impairment operates as a stressor that generates strain for both partners within marriages. We further extend the stress moderation hypothesis to dyadic contexts and investigate how gender structures the dyadic stress process.

To date, while several studies have examined how spousal cognitive impairment affects marriage, most rely on data from only one partner

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rather than both spouses, or use non-representative small samples with limited generalizability (Clare et al., 2012; Davis, 2020; De Vugt et al., 2003; Garand et al., 2007; Wright, 1991; Yorgason et al., 2020). Yet, modelling dyadic process from one side of the dyad provides poor alignment between theoretical propositions and the analytic approach. These studies also examine cognitive health and marital quality cross-sectionally, which prevents establishing the temporal order between the two (Gallagher and Stokes, 2021; Wong and Hsieh, 2019). Additionally, few studies have examined how social support and engagement moderate marital responses to spousal cognitive impairment.

In this study, we integrate the stress process model with the linked lives perspective to demonstrate how health stressors operate through dyadic pathways and differently for women and men that are not captured in individual applications. We focus specifically on marital strain because it captures the tensions, difficulties, and stress that couples experience when health conditions disrupt established relationship patterns. More importantly, marital strain is a powerful predictor of subsequent physical and mental health outcomes for both partners (Carr et al., 2016; Miller et al., 2013; Moorman, 2016; Robles et al., 2014; Umberson et al., 2006). We use two waves of nationally representative couple data from the National Social Life, Health, and Aging Project (NSHAP) to ask: How is spousal cognitive health associated with one's perceived marital strain? How do one's social support and engagement (family support, friend support, socialization, and community participation) moderate the dyadic association? Are there differences for husbands versus wives? We hypothesize gender differences in responses to the health stressor, such that spousal cognitive health may affect husbands' and wives' perceived marital strain differently. Further, we expect that different types of social support and engagement may have varying moderating effects for husbands versus wives.

1. Stress process model in dyadic contexts

This study draws on the stress process model as its primary theoretical framework, while significantly extending this model to capture dyadic processes often overlooked in previous research. The stress process model conceptualizes stress as a social process where stressors lead to negative outcomes through various pathways, moderated by social and psychological resources (Pearlin et al., 1981, 2005). However, the model has typically been applied at the individual level, examining how one person's stressors affect their own outcomes. This individualistic orientation overlooks fundamental insights from the life course perspective on linked lives, where one person's experiences necessarily affect others (Elder, 1994, 1998). The importance of extending stress process models to dyadic contexts becomes particularly evident when examining intimate relationships, where partners' experiences are fundamentally interconnected through shared resources, mutual dependencies, and emotional bonds (Carr and Utz, 2020).

Cognitive health conditions present a compelling case for dyadic stress analysis because they directly affect the communicative and interactive capacities fundamental to relationship functioning (Egilstroed et al., 2019; Schulz and Martire, 2004; Yorgason et al., 2020). Spousal cognitive impairment is often associated with increasing caregiving needs that are physically, emotionally, and financially demanding for the healthy partner, even with the support from professional caregivers (Paradise et al., 2015). It also creates role overload where existing responsibilities must be maintained while new caregiving demands are added (Aneshensel et al., 1995; Pearlin et al., 1990; Pinquart and Sörensen, 2006). This role overload operates as a stressor that emerges from the primary stressor of cognitive decline, which increases marital strain (Coverman, 1989). Distinct from many other physical health declines, cognitive impairment often means different communication patterns that are essential for relationship maintenance, though the severity of these disruptions varies considerably between mild cognitive impairment and dementia. In mild cognitive impairment, couples may

experience more subtle communication challenges, such as forgetting conversations or details that spouses have shared, which can create feelings of being unheard and distressed (Garand et al., 2007). As mild cognitive impairment progresses to dementia, individuals struggle more profoundly with language production and comprehension, making communication increasingly one-sided (Davies et al., 2010; Wright, 1991). In some cases, cognitive impairment is also linked to the spouse's anxiety, depression, and psychological stress (Bertrand et al., 2006; Cooper et al., 2007; Gallagher-Thompson et al., 2001; Joling et al., 2015), which further strains relationships and the perceptions of marital quality (Booth and Johnson, 1994; Huo et al., 2022; Pruchno et al., 2009).

To date, the dyadic expansion of the stress process model has yet to be adequately tested with population-level couple data on cognitive health and marital strain. Most existing studies rely on non-representative data from small samples, which limits the ability to generalize findings beyond the specific sample to broader populations (De Vugt et al., 2003; Garand et al., 2007; Yorgason et al., 2020). The few studies using population-level data are cross-sectional and provide mixed evidence. While Wong and Hsieh (2019) found no significant association between spousal cognitive health and marital quality, Gallagher and Stokes (2021) showed that only husbands' cognitive impairment was associated with wives' lower marital support and higher marital strain. To address the gap, the current study uses two waves of nationally representative couple data and further empirically tests the stress process model in the dyadic context of cognitive impairment.

2. Stress moderation by social support and engagement

The stress moderation hypothesis posits that social resources moderate the relationship between stressors and outcomes (Cohen and Wills, 1985; Turner and Lloyd, 1999). Extensive research has documented these moderating effects across various stressors and populations, establishing social support and engagement as key components of stress resilience and coping resources (Thoits, 2011; Uchino, 2009). However, like the broader stress process model, the stress moderation hypothesis has typically been applied at the individual level without considering how social support and engagement might operate differently when stressors affect couples rather than individuals alone (Bodenmann, 2005). When health conditions create relationship-level stressors, such as disrupted communication, changed role distributions, and altered intimacy patterns, social resources must address not only individual coping needs but also the dyadic disruptions created by the health condition (Berg and Upchurch, 2007). This creates more complex moderation patterns because social resources may simultaneously benefit one aspect of the stress process while potentially complicating others. For instance, when family members provide instrumental support for health-related risks, this may reduce caregiving burdens but potentially threaten the healthy spouse's sense of competence or control over the situation (Martire and Schulz, 2007).

Moreover, the dyadic context introduces considerations about resource appropriateness that are less relevant in individual applications. Social support and engagement that help individuals cope with personal stressors may not be equally effective for relationship-focused stressors. For instance, when cognitive impairment disrupts marital communication and emotional connection, social support and engagement that provide alternative outlets for these needs—such as friend relationships that offer emotional intimacy—may be particularly valuable (Antonucci et al., 2014). However, socialization and community participation present more complex patterns in moderating the dyadic relationship between spousal cognitive impairment and own marital strain. Increased socialization and community might create role conflicts between social obligations and caregiving responsibilities, which increases rather than decreases stress (Pearlin et al., 1990). Additionally, increased socialization may trigger social comparisons where

individuals compare their strained circumstances with their peers' experiences (Buunk and Gibbons, 2007). This may exacerbate feelings of burden rather than providing relief.

In sum, these differential patterns suggest that the stress buffering effects in dyadic contexts must be empirically examined for specific resource-support combinations. We need to move beyond simple models of social resources as uniformly beneficial to more nuanced understandings of how different types of support and engagement moderate the dyadic relationship between spousal cognitive impairment and marital strain.

3. Gender differences in marital responses

Gender represents a fundamental organizing principle for both stress processes and social support utilization, shaping how individuals experience, interpret, and respond to stressors within intimate relationships (Bird and Rieker, 2008; Thoits, 2011). Women and men enact and thereby reproduce culturally sanctioned scripts that divide caregiving, help-seeking, and emotional gender roles along gendered lines (West and Zimmerman, 1987).

First, we expect gender asymmetries in the dyadic relationship between spousal cognitive impairment and marital strain. Women may perceive more marital strain when their husbands experience cognitive impairment than when their husbands are cognitively healthy. One explanation for the differential responses is the gendered division of relationship labor. Compared with men, women perform more emotion work and relationship maintenance (Thomeer et al., 2013, 2015). This makes them more invested in and dependent upon the communicative and emotional aspects of marriage that are directly threatened by cognitive impairment. Women also feel distressed as they derive more of their identity and well-being from relationship quality than men (Kiecolt-Glaser and Newton, 2001; Williams, 2003). In contrast, men's typical lower involvement in emotion work means they may experience less disruption when their wives' capacity for relationship work diminishes (Erickson, 2005). Another explanation involves gendered caregiving norms and role expectations. When husbands experience cognitive impairment, women are culturally expected to assume primary responsibility (Hooyman and Gonyea, 1995; Moen and Chermack, 2005). This creates significant role strain as they must maintain existing household and relationship responsibilities while adding intensive care tasks (Aneshensel et al., 1995; Piquart and Sörensen, 2006).

Further, the effects of social support and engagement as stress buffers are further complicated by gender. Existing studies document significant gender differences in social connectedness and support networks (Adams and Blieszner, 1995; Antonucci et al., 2001; Cornwell et al., 2008; Umberson et al., 1996). When facing husbands' cognitive decline, friend support may provide an important outlet for women to process relationship challenges and receive emotional intimacy. Men's social networks, however, focus more on shared activities and instrumental support, with less emphasis on emotional disclosure and discussion of personal problems (Antonucci et al., 2014). These differences suggest that identical social support and engagement may have different buffering effects for husbands versus wives facing spousal cognitive decline.

4. Data and methods

4.1. Data

The study uses dyadic data from the National Social Life, Health, and Aging Project (NSHAP). NSHAP is a nationally representative survey of 3005 community-dwelling American older adults ages 57–85 during the initial Wave 1 in 2005–2006 (Waite et al., 2007). The weighted response rate of the Wave 1 sample was 75.5 %. In NSHAP Wave 2, a random subsample of Wave 1 respondents with co-residing partners was contacted by the NSHAP team for the couple study, yielding 955 dyads of partners (O'Muircheartaigh et al., 2014; Wong and Hsieh, 2021). We did

not include two same-sex couples due to limited power for statistical inferences and focused on 953 heterosexual pairings. Of the 953 heterosexual couples in Wave 2, NSHAP Wave 3 (2015–16) retained 620.

We implemented the approach used in previous studies to address the attrition problem between Waves 2 and 3 (Goldman and Cornwell, 2018; Iveniuk et al., 2020). We multiplied the Wave 2 couple weights by the inverse probability of remaining in the Wave 3 sample. To obtain the latter, we fit a logistic regression that predicts retention by both couple members' characteristics, including demographics, self-rated physical health, self-rated mental health, functional health, and the difficulty of reaching the respondents rated by the interviewers.

4.2. Measurement

4.2.1. Cognitive function

Cognitive function is measured using the Montreal Cognitive Assessment (MoCA), a frequently used clinical screening tool (Nasreddine et al., 2005). In NSHAP Waves 2, an 18-item modified version (MoCA-SA) was included to preserve the sensitivity of the full MoCA in differentiating stages of cognitive decline while shortening it and adapting it for administration by nonmedical survey personnel in a non-clinical setting (Shega et al., 2014). MoCA-SA is internally reliable, and its scores (range 0–30) are highly correlated with full MoCA scores across demographic subgroups (Kotwal et al., 2015). Consistent with prior studies (Lindau et al., 2018; Waite et al., 2022), we divide MoCA-SA scores into three categories based on cut points for community-based samples: Cognitively Healthy (23–30), Mild Cognitive Impairment (MCI; 18–22), and Dementia (0–17). The cognitive healthy is used as the reference category in the analysis. In Appendix A Table 1, we show that most of the cognitively healthy population in Wave 2 remain cognitively healthy in Wave 3, and most of the older adults classified as dementia by MoCA-SA in Wave 2 remain in the same category in Wave 3.

Table 1
Weighted Descriptive Statistics, NSHAP W2 to W3 Longitudinal Sample (N = 620 couples).

Variables	Female (N = 620)	Male (N = 620)	p-value ^a
W3 Marital Strain (0–3)	1.32 (0.68)	1.36 (0.71)	0.400
W2 Cognitive Health			0.010
Cognitively Healthy	77.29 %	66.89 %	
Mild Cognitive Impairment	16.75 %	25.05 %	
Dementia	5.95 %	8.06 %	
Social Support and Engagement in W2			
Family Support	2.50 (0.60)	2.23 (0.75)	<0.001
Friend Support	2.21 (0.80)	1.82 (0.90)	<0.001
Socializing with Friends/Relatives	4.43 (1.23)	4.16 (1.37)	<0.001
Formal Community Participation (summary score)	2.21 (1.81)	1.76 (1.71)	<0.001
Attending Religious Services	2.59 (1.72)	2.29 (1.81)	<0.001
Volunteering	2.37 (2.03)	1.98 (2.01)	0.007
Attending Meetings of Organized Groups	2.79 (2.19)	2.35 (2.11)	0.005
Demographic Covariates in W2			
Age	68.17 (7.55)	71.42 (7.03)	<0.001
Race and Ethnicity			0.5
Non-Hispanic White	80.26 %	79.95 %	
Non-Hispanic Black	8.05 %	8.13 %	
Hispanic	7.54 %	9.07 %	
Other	4.15 %	2.85 %	
Education			0.029
Less than High School	14.23 %	16.36 %	
High School or Equivalent	24.87 %	24.93 %	
Some College	36.95 %	26.36 %	
Bachelors or More	23.95 %	32.35 %	
Depression	32.62 %	27.39 %	0.100

¹ Mean (SD); %.

^a Paired t-test adapted to complex survey samples; Wald test of independence for complex survey samples.

4.2.2. Marital strain

To measure marital strain, respondents in NSHAP were asked, “How often do your [current partner] make too many demands on you?” and “How often do your [current partner] criticize you?”. Responses for each item were coded as 0 (*never*), 1 (*hardly ever*), 2 (*some of the time*), and 3 (*often*). The internal consistency for the averaged marital strain was 0.64 in Wave 2 and 0.63 in Wave 3.

4.2.3. Social support and engagement

This study focuses on four types of extra-marital social support and engagement—friend support, family support, socialization, and formal community participation. To capture friend and family support, respondents were asked: “How often can you open up to [friends/family member] if you need to talk about your worries?” and “How often can you rely on [friends/family member] for help if you have a problem?”. Responses range from 0 (*never*), 1 (*hardly ever*), 2 (*some of the time*), to 3 (*often*). Following previous research (Upenieks and Liu, 2022; York Cornwell, 2016), we averaged the results to represent friend and family support (Cronbach’s $\alpha = 0.72$ in Wave 2 and 0.73 in Wave 3 for friend support; Cronbach’s $\alpha = 0.73$ in Wave 2 and 0.71 in Wave 3).

For the frequency of socialization, NSHAP respondents were asked “In the past 12 months, how often did you get together socially with friends or relatives?” with the responses ranging from 0 (*never*) to 6 (*several times a week*).

The formal community participation is operationalized by three indicators: the frequency of 1) attending meetings of organized groups, 2) attending religious services, and 3) doing volunteer work. All these items are rated from 0 (*never*) to 6 (*several times a week*). We averaged the results on these three indicators to get a summary score of an individual’s community participation (Cronbach’s $\alpha = 0.72$).

4.2.4. Other covariates

Covariates include both husbands’ and wives’ age, race/ethnicity, education, and depressive symptoms. To attenuate potential reverse causality, we also controlled for Wave 2 marital strain. Particularly, race/ethnicity was categorized into non-Hispanic White (reference group), non-Hispanic Black, Hispanic, and Other. Education was categorized into less than high school (reference group), high school or equivalent, some college, bachelor’s or more. Depressive symptoms were dichotomized (1 = *depression*, 0 = *no depression*) based on the cut-off index score in the NSHAP’s version of the Center for Epidemiologic Studies Depression Scale (CES-D), see (Payne et al., 2014).

4.3. Analytic approach

First, we present descriptive statistics on Wave 2 covariates and Wave 3 dependent variables by gender. We test for gender differences via paired t-tests for continuous variables and Wald tests for categorical variables.

Then, we employ the Actor-Partner Interdependence Model (APIM) fitted using Structural Equation Models to model the dyadic link between Wave 2 cognitive health and Wave 3 marital strain, controlling for the marital strain in Wave 2 (Cook and Kenny, 2005). Distinct from individual-level analyses, APIM accounts for the interdependence between couples and examines both actor and partner effects. APIM simultaneously fits two regression equations and uses correlated error terms between partners’ characteristics for consistent regression estimates. Then, we include an interaction term between cognitive health (with cognitively healthy as the reference category) and measures of the respondent’s own friendship support, family support, socialization, and community participation, to examine how social support and engagement moderate the dyadic relationship. For example, when examining the differential influence of wives’ and husbands’ cognitive health by social support and engagement on husbands’ marital strain, the interaction is constructed by interacting between cognitive health with husbands’ own social support and engagement. Then, when examining

the differential influence on wives’ marital strain, the interaction term is constructed by interacting cognitive health with wives’ own social support and engagement.

All descriptive results and analyses presented below adapt to the multi-stage complex survey design and are weighted by the couple weights in Wave 2 that account for both the inverse probability of selection in sampling and the likelihood of nonresponses (O’Muircheartaigh et al., 2014). Following previous studies, we used full information maximum likelihood (FIML) to handle item-level missing values (up to 11 %, primarily due to non-response for questions on social engagement asked in the leave-behind questionnaire) (Iveniuk et al., 2014). FIML leverages all available data across variables by maximizing a case-wise likelihood function, which yields more reliable and efficient parameter estimates than either complete-case analysis or single-value imputation (Enders and Bandalos, 2001). The analyses were completed using the “sem” function in Stata 18 (StataCorp, 2023).

5. Results

Table 1 presents weighted descriptive statistics by gender. Compared to men, women are more likely to be cognitively healthy and less likely to experience mild cognitive impairment or dementia at baseline (Wave 2). Marital strain is measured at Wave 3, and results show that men perceive higher levels of marital strain relative to women, but gender differences are not statistically significant. For moderators, women show significantly higher family support, friend support, socialization, and social participation than men at Wave 2.

Table 2 presents the results on the dyadic relationship between cognitive health and marital strain. First, individuals’ own cognitive health at baseline does not show a significant relationship with their perceived marital strain five years later in Wave 3. We only find suggestive evidence that women with dementia in Wave 2 report lower perceived marital strain in Wave 3 compared to those who are cognitively healthy ($b = -0.27$, $p < 0.10$). Second, we find significant relationships between spousal cognitive health and own marital strain.

Table 2
Actor-partner interdependence models estimated for cognitive health and marital strain.

	Husbands	Wives
W2 Husbands’ Cognition (ref. = Cognitively Healthy)		
MCI	0.09	0.12+
Dementia	0.03	0.42**
W2 Wives’ Cognition (ref. = Cognitively Healthy)		
MCI	−0.24*	−0.09
Dementia	−0.44**	−0.27+
Husbands’ Age	−0.01	
Husbands’ Education (ref. = Less than High School)		
High School or Equivalent	0.05	
Some College	−0.07	
Bachelors or more	−0.11	
Husbands’ Racial/Ethnic Group (ref. = Non-Hispanic White)		
Non-Hispanic Black	0.17	
Hispanic	−0.07	
Other	0.08	
Husbands’ Depression	0.19*	
Husbands’ Marital Strain in W2	0.56**	
Wives’ Age		−0.00
Wives’ Education (ref. = Less than High School)		
High School or Equivalent		0.07
Some College		0.14
Bachelors or more		0.02
Wives’ Racial/Ethnic Group (ref. = Non-Hispanic White)		
Non-Hispanic Black		0.16
Hispanic		−0.08
Other		0.04
Wives’ Depression		0.15*
Wives’ Marital Strain in W2		0.60**
Observations	620	620

Notes. ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

More importantly, the relationship differs by gender. Compared to wives whose husbands are cognitively healthy, wives whose husbands have mild cognitive impairment ($b = 0.12, p < 0.10$) and dementia report higher marital strain ($b = 0.42, p < 0.01$). However, having the wives' experienced mild cognitive impairment ($b = -0.24, p < 0.05$) or dementia ($b = -0.44, p < 0.01$) than being cognitively healthy, husbands show lower marital strain. To facilitate the interpretation of the APIM results, we extract the estimated coefficients from Table 2 and create a visual representation showing the actor and partner effects in Fig. 1.

Table 3 demonstrates whether and how social support and engagement moderate the dyadic link between spousal cognitive health and marital strain. Results show that the moderating effects differ by gender and the types of support and engagement being examined. First, we find that the relationship between husbands' cognitive impairment and wives' higher marital strain is moderated by wives' friend support but not family support, socialization, and community participation. Compared to wives whose husbands are cognitively healthy, wives whose husbands have mild cognitive impairment ($b = -0.17, p < 0.10$) or dementia ($b = -0.28, p < 0.05$) tend to report less marital strain when they have high friend support. Second, results show that the relationship between wives' cognitive impairment and husbands' marital strain is moderated by socialization but not by friend support, family support, and community participation. Compared to husbands whose wives are cognitively healthy, husbands whose wives have mild cognitive impairment ($b = 0.15, p < 0.05$) or dementia ($b = 0.18, p < 0.01$) tend to report higher marital strain when they have more socialization with friends or relatives. Hence, results suggest that different types of social support and engagement have varying moderating effects by gender.

6. Discussion

Understanding how cognitive health shapes late-life marriages has become increasingly critical as the population ages and cognitive impairment prevalence rises. When cognitive impairment disrupts marriages, it threatens not only individual well-being but also the primary social relationship that most older adults depend upon for support, assistance, and meaning in late life (Carr and Springer, 2010; Umberson et al., 2010). Despite extensive research on marriage and cognitive health, most focus on how marital quality affects cognitive health (Haghighi et al., 2024; Huo et al., 2022; Liu et al., 2021; Xu et al., 2016),

the reverse pathway—how cognitive health reshapes marital dynamics—remains underexplored, particularly through dyadic frameworks that recognize the inherently relational nature of cognitive impairment's effects.

This study uses nationally representative couple data from two waves of the NSHAP to ask: How is spousal cognitive impairment associated with one's perceived marital strain? Does one's social support and engagement (family support, friend support, socialization, and community participation) moderate the dyadic association? Are there any gender differences? Results show gender asymmetries in the dyadic relationship between spousal cognitive health and marital strain. Wives report higher marital strain when husbands experience dementia, while husbands report lower marital strain when wives experience cognitive impairment. We further find gendered patterns of stress moderation. While high friend support is associated with lower marital strain for wives facing spousal cognitive impairment, socialization is associated with elevated marital strain for men.

Our study makes three key contributions. First, our findings provide strong support for extending stress process models to dyadic contexts. Results from the Actor-Partner Interdependence Models demonstrate a significant relationship between spousal cognitive impairment and own marital strain. However, we do not find individual's cognitive health has a significant relationship with their own marital strain. The significant partner effects align with theoretical perspectives emphasizing the interdependence within couples (Carr and Utz, 2020), where one's health challenge creates relationship-level stressors that affect the other. For the absence of actor effects, one possible explanation is that the metacognitive limitations inherent in cognitive impairment may prevent affected individuals from perceiving and reporting relationship changes they might otherwise experience. However, cognitively healthy spouses maintain full awareness of relationship transformation while losing the ability to discuss these changes meaningfully with their partners (Clare et al., 2011). In sum, these findings highlight the inherently relational nature of cognitive impairment within marriage and the need to examine the dyadic stress process.

Second, and more importantly, our findings suggest gender asymmetries in the relationship between spousal cognitive impairment and own marital strain. While wives reported higher marital strain when husbands experienced dementia, husbands reported lower marital strain when wives had mild cognitive impairment and dementia. This reveals

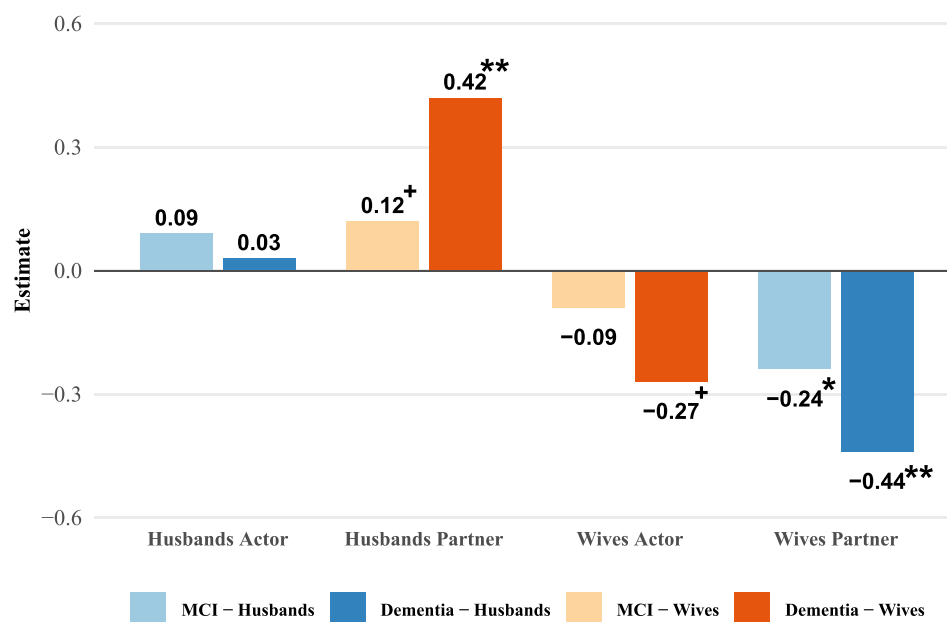


Fig. 1. Dyadic Associations Between Cognitive Health and Marital Strain

Notes. ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Table 3

Actor-partner interdependence models estimated for W2 cognitive health and W3 marital strain moderated by W2 social support and engagement.

	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives
W2 Husbands' Cognition (ref. = <i>Cognitively Healthy</i>)										
MCI	0.09	0.12+	0.20	0.50*	0.03	0.36	0.82**	0.07	0.24+	0.12
Dementia	0.03	0.42**	0.33	0.96**	0.46	0.64	0.01	0.70+	0.05	0.32
W2 Wife's Cognition (ref. = <i>Cognitively Healthy</i>)										
MCI	-0.24*	-0.09	0.11	-0.22	-0.13	-0.24	-0.83**	0.33	-0.34**	-0.11
Dementia	-0.44**	-0.27+	-0.40+	-0.25	-0.20	0.09	-1.06**	-0.01	-0.51**	-0.12
W2 Husband's Cognition * Own Friend Support (FrS) (ref. = <i>Husband Cognitively Healthy * FrS</i>)										
MCI * FrS			-0.05	-0.17+						
Dementia * FrS			-0.18	-0.28*						
W2 Wife's Cognition * Own Friend Support (FrS) (ref. = <i>Wife Cognitively Healthy * FrS</i>)										
MCI * FrS			-0.20+	0.06						
Dementia * FrS			0.01	-0.07						
W2 Husband's Cognition * Own Family Support (FamS) (ref. = <i>Husband Cognitively Healthy * FamS</i>)										
MCI * FamS					0.03	-0.10				
Dementia * FamS					-0.22	-0.09				
W2 Wives' Cognition * Own Family Support (FamS) (ref. = <i>Wife Cognitively Healthy * FamS</i>)										
MCI * FamS					-0.06	0.06				
Dementia * FamS					-0.07	-0.16				
W2 Husband's Cognition * Own Socialization with Friends and Relatives (Social) (ref. = <i>Husband Cognitively Healthy * Social</i>)										
MCI * Social							-0.18**	0.01		
Dementia * Social							0.00	-0.06		
W2 Wife's Cognition * Own Socialization with Friends and Relatives (ASocial) (ref. = <i>Wife Cognitively Healthy * Social</i>)										
MCI * Social							0.15*	-0.10		
Dementia * Social							0.18**	-0.06		
W2 Husband's Cognition * Own Formal Community Participation (FCP) (ref. = <i>Husband Cognitively Healthy * FCP</i>)										
MCI * FCP									-0.09+	-0.01
Dementia * FCP									0.00	0.04
W2 Wives' Cognition * Own Formal Community Participation (FCP) (ref. = <i>Wife Cognitively Healthy * FCP</i>)										
MCI * FCP									0.06	0.01
Dementia * FCP									0.01	-0.16**
Observations	620	620	620	620	620	620	620	620	620	620

Notes. **p < 0.01, *p < 0.05, + p < 0.10. Covariates were included in the models.

how identical objective health conditions can produce different subjective relationship experiences for husbands and wives. It further highlights the need to integrate gender perspectives into the dyadic stress model.

The marital strain wives experience is consistent with previous research showing that spousal health declines have more negative impacts on women relative to men (Gallagher and Stokes, 2021; Iveniuk et al., 2014; Li and Waite, 2025; Yorgason et al., 2008). The increased marital strain does not necessarily indicate conflict, but may reflect women's intensive emotion work, distress, and caregiving responsibilities (Coyne and Smith, 1991). Following spousal cognitive decline, wives may experience "double jeopardy", simultaneously losing the emotional support and companionship their husbands previously provided while assuming intensive caregiving tasks (Aneshensel et al., 1995; Pinquart and Sörensen, 2006). The combination of lost companionship and increased caregiving burden may thus compound wives' distress and lead to higher perceived marital strain.

In contrast, husbands report lower marital strain when wives experience cognitive impairment. One possible explanation is that men are less likely than women to undertake intensive caregiving and household tasks. Instead, they mobilize instrumental support from children or other relatives and utilize paid external services to do household chores (Pacheco Barzallo et al., 2024; Swinkels et al., 2019). By delegating caregiving responsibilities and receiving supplementary help with household management, husbands may avoid the intensive caregiving burden that could negatively affect their marital experience. Another explanation relates to health-related social control. Wives' cognitive decline reduces their capacity to engage in health-related social control, whereby wives help manage their husbands' health (Umberson, 1992). While health-related control and management benefit husbands' health (Birditt and Antonucci, 2008; Birditt et al., 2014), these behaviors are often perceived as demands, criticism, or nagging that contribute to marital strain (Rook et al., 2011; Tapp, 2004). Accordingly, when wives experience cognitive impairment and cannot perform this

health-monitoring role as effectively as before, husbands may receive fewer demands and criticism, resulting in lower perceived marital strain.

It is important to recognize that husbands' lower marital strain may not necessarily indicate positive outcomes. Previous studies have demonstrated that spousal demands, criticism, and even nagging are associated with better health outcomes (Birditt and Antonucci, 2008; Birditt et al., 2014; Tapp, 2004). Thus, while husbands perceive less marital strain, this may imply a reduction in health-related social control that undermines husbands' long-term health.

It should also be noted that our findings differ from previous U.S. research showing no significant relationship between wives' cognitive health and husbands' marital quality (Gallagher and Stokes, 2021; Wong and Hsieh, 2019). While previous studies rely on cross-sectional data that examine associations at a single time point, we include two-wave data and investigate how cognitive health at one wave affects marital strain at a subsequent wave while controlling for baseline marital strain. Analyses with two-wave data establish clearer temporal ordering, which may reveal effects that are obscured in cross-sectional data. This may also suggest that cognitive health's effects on marital strain are a process that unfolds over time rather than an immediate cross-sectional association.

Moreover, our examination of stress moderation reveals that different types of social support and engagement have varying moderating effects by gender. First, we find that friend support significantly buffers marital strain for wives facing husbands' cognitive impairment. This aligns with existing research documenting women's friendship networks as sources of emotional validation and intimate disclosure (Antonucci et al., 2001; Umberson et al., 1996). Women's emotionally intimate friends provide the type of support most needed for coping with marriage-related stress. In contrast, men's social connections center on shared activities and instrumental support rather than emotional disclosure, making friendship less effective for processing marital strain (Walker, 1994). Second, results show that socialization increased rather than decreased marital strain for men. One explanation for this

counterintuitive result is that increased socialization may create uncomfortable contrasts between men’s constrained caregiving circumstances and peers’ experiences, potentially intensifying awareness of relationship limitations rather than providing relief. Finally, our nonsignificant findings for family support and community participation suggest that not all social resources function as effective stress buffers in the context of spousal cognitive impairment. For instance, the type or quality of family support available may not match the specific needs generated by cognitive impairment within marriage (Connidis and McMullin, 2002; Martine and Schulz, 2007). In sum, results on stress moderation highlight the importance of examining different types of support and engagement and considering how genders structure their effectiveness as stress buffers.

Several limitations of this study should be noted. First, future research should more closely examine the mechanisms underlying the gender asymmetries we observed, including caregiving time and intensity, and potential personality changes accompanying cognitive impairment (Terracciano et al., 2023). Qualitative research is also needed to explore how couples interpret cognitive changes and illuminate the meaning-making processes that produce differential strain responses. Second, our analysis was limited to community-dwelling couples, and findings cannot be generalized to those receiving institutional care. We also limit our analysis to couples with complete data over two waves. To address potential attrition bias, we adjusted the couple weights that upweight the groups disproportionately more likely to suffer attrition (e.g., due to mortality or non-response) and down-weight the over-represented groups to correct for any systematic differences between respondents and non-respondents over time. While this approach improves the accuracy of our analyses, we call for future research to track longitudinal changes in marital well-being and consider other approaches for addressing potential non-random missingness (Jackson et al., 2019). Third, our measure of marital strain focuses on demand and criticism, which may not capture the full spectrum of relationship difficulties that couples experience when facing cognitive health challenges. We also conducted additional analysis examining the relationship between spousal cognitive impairment and marital support (Appendix B Table 1). Results show significant gender differences and are consistent with our findings on marital strain. Wives report lower marital support when husbands experience dementia, while husbands report few changes when wives experience cognitive impairment. Data and future research with broader measures of marital quality may help provide a more comprehensive understanding of the marital impact of spousal cognitive health. Additionally, our social support measures do not capture the source and type of support (e.g., instrumental help from adult children), preventing us from identifying the specific support that is most effective in coping with spousal cognitive decline. Finally, while cognitive declines generate marital strain, negative marriages may in turn lead to worse cognitive functioning. Future studies with longer follow-up may be better positioned for establishing the causal relationship between spousal cognitive health decline and marital strain.

Appendix

Appendix A Table 1
Cross-tabulation of Cognitive Health in Waves 2 and 3, NSHAP

	Wave 3 Cognitive Health		
	Cognitively Healthy	Mild Cognitive Impairment	Dementia
Wave 2 Cognitive Health			
Cognitively Healthy	81.40 %	16.30 %	2.29 %
Mild Cognitive Impairment	34.02 %	46.31 %	19.67 %
Dementia	6.58 %	32.89 %	60.53 %

7. Conclusion

This study demonstrates that cognitive health reshapes intimate relationships through complex dyadic processes structured by gender. As cognitive health challenges become increasingly prevalent with population aging, our gendered dyadic framework provides essential insights for developing interventions that address not just individual health needs but the gendered relationship processes through which cognitive conditions create divergent social outcomes, ultimately promoting both health and relationship well-being in later life.

CRediT authorship contribution statement

Meiyi Li: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. Yiang Li: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. Michal Engelman: Writing – review & editing, Supervision.

Ethics statement

This study is based on secondary analysis of the NSHAP data, and no additional ethical approval was required.

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Appendix B Table 1

Actor-Partner Interdependence Models Estimated for Cognitive Health and Marital Support

	Husbands	Wives
W2 Husbands' Cognition (<i>ref. = Cognitively Healthy</i>)		
MCI	0.02	−0.12*
Dementia	−0.11	−0.07
W2 Wives' Cognition (<i>ref. = Cognitively Healthy</i>)		
MCI	0.02	0.03
Dementia	−0.04	0.08
Husbands' Age	−0.00	
Husbands' Education (<i>ref. = Less than High School</i>)		
High School or Equivalent	−0.05	
Some College	−0.03	
Bachelors or more	−0.05	
Husbands' Racial/Ethnic Group (<i>ref. = Non-Hispanic White</i>)		
Non-Hispanic Black	−0.25*	
Hispanic	0.04	
Other	−0.01	
Husbands' Depression	0.01	
Husbands' Marital Support in W2	0.51**	
Wives' Age		−0.00
Wives' Education (<i>ref. = Less than High School</i>)		
High School or Equivalent		−0.06
Some College		0.02
Bachelors or more		−0.1
Wives' Racial/Ethnic Group (<i>ref. = Non-Hispanic White</i>)		
Non-Hispanic Black		−0.12
Hispanic		0.02
Other		0.06
Wives' Depression		0
Wives' Marital Support in W2		0.72**
Observations	620	620

**p < 0.01, *p < 0.05, + p < 0.10.

Data availability

Data will be made available on request.

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