

# Housework, Health, and Well-Being in Older Adults: The Role of Socioeconomic Status

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For most adults, household chores are undesirable tasks yet need to be completed regularly. Previous research has identified absolute hours spent on household chores and one's perceived fairness of the housework distribution as predictors of romantic relationship quality and well-being outcomes. Drawing from the Equity Theory, we hypothesized that perceived fairness acts as an underlying psychological mechanism linking household chores hours to long-term effects of relationship quality, well-being, physical health, and sleep quality in a sample of 2,644 married and cohabiting adults from the Midlife Development in the U.S. study. Additionally, following the Reserve Capacity Model, socioeconomic status (SES) was tested as a moderator because of its association with exposure to stressors and psychological resources which contribute to perceived fairness. Moderated mediation results showed significant indirect effects of household chore hours through perceived fairness on prospective measures of well-being, marital quality, physical health, and sleep dysfunction among individuals of lower SES but not higher SES when controlling for age, sex, and paid work hours. These results highlight the importance of perceived fairness and the influence of SES in the links among household chores and long-term relationship processes, health, and well-being.

*Keywords:* perceived fairness, marriage, household chores, well-being, socioeconomic status

Housework—unpaid tasks people do to maintain their homes (Lachance-Grzela & Bouchar, 2010)—is a common chore that nearly every long-term romantic couple faces and one that often spurs disagreement. Completing household chores requires both time and resources (material and psychological). Many middle-

and upper-class families have sufficient financial resources to at least partially outsource housecleaning (Berardo, Shehan, & Leslie, 1987), whereas individuals of lower socioeconomic status (SES) typically do not. Building on two separate theories, the Equity Theory (Adams, 1965) and the Reserve Capacity Model (Gallo & Matthews, 2003), the current research extends the literature in four main ways. First, through the Equity Theory, we consider perceived fairness as a psychological mechanism linking time spent on household chores to health and well-being outcomes. Second, we extend the housework literature to health-related outcomes (e.g., physical health and sleep dysfunction). Next, drawing from the Reserve Capacity Model, we propose that SES may either buffer (high SES) or exacerbate (low SES) perceptions of fairness. Lastly, we include prospective analyses for the associations between housework hours, SES, perceived fairness, and each of the outcome variables to gain greater purchase on the direction of these hypothesized associations.

## The Role of Perceived Fairness

Past work has shown that the absolute number of hours that romantic partners spend on household chores gives an incomplete picture of the dynamics of housework allocation (Blair & Lichter, 1991). For example, one partner may spend a greater number of hours on housework but still see their contribution as fair or vice versa. Research shows that a key psychological process—perceived fairness—is a better predictor of various outcomes com-

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pared with hours of household chores. The Equity Theory (Adams, 1965; Walster, Berscheid, & Walster, 1973) states that individuals attempt to maximize outcomes relative to their inputs and that an equitable relationship endures if the individual perceives each partner to receive equal outcomes. Accordingly, individuals become distressed when they perceive themselves to be in an unfair relationship, and the more unequal the relationship is, the greater distress individuals experience. Thus, we expect consequences of perceived unfairness to permeate into various domains of an individual's life, resulting in social, psychological, and physical manifestations.

Within the context of romantic relationships, perceived fairness has been a notable mechanism linking housework to greater marital conflict (Newkirk, Perry-Jenkins, & Sayer, 2017), greater marital distress (Grote & Clark, 2001), lower marital satisfaction (Klumb, Hoppmann, & Staats, 2006), and an increased likelihood for marital dissolution (Ruppanner, Brandén, & Turunen, 2018). Not only can perceived unfairness about household chores have direct consequences within the context of the relationship, but daily and accumulating distress from unfair perceptions can also detrimentally impact one's well-being through greater expression of negative affect (Lively, Steelman, & Powell, 2010) and greater depressive symptoms (Lennon & Rosenfield, 1994). In the current study, two distinct concepts were adopted to encompass the multifaceted aspects of well-being: hedonic well-being—increasing pleasant experiences and decreasing painful ones (Lucas, Diener, & Suh, 1996)—and eudaimonic well-being—appreciating personal accomplishments and being open to learning from life challenges (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001).

### Determinants of Fairness Perceptions: Socioeconomic Status

Prior work has explored a variety of factors that perceived fairness is influenced by, some include availability of time (Lothaller, Mikula, & Schoebi, 2009), relative income that each partner contributes (Lam, McHale, & Crouter, 2012), gender dynamics (Sweeting, Bhaskar, Benzeval, Popham, & Hunt, 2014), and social comparison (i.e., comparing one's housework responsibilities with that of others; Thompson, 1991). We extend previous findings by proposing SES as an additional important factor that may alter perceptions of fairness concerning time spent on household chores. Prior to returning home from work, individuals across the SES spectrum have already experienced a disproportionate number of daily stressors. Some common chronic stressors including status-based discrimination (Bird & Bogart, 2001), neighborhood crime, and poor public transportation (Sooman & Macintyre, 1995) are aspects that lower SES individuals encounter at a greater frequency and magnitude compared with higher SES individuals (Gallo & Matthews, 2003). So after a long day, household chores serve as another stressor added to the list of accumulating stressors already experienced by individuals of lower SES.

In addition to the greater frequency of experienced stressors, individuals of lower SES are also more susceptible to stress because of a reduced reserve of psychological resources—a process predicted by the Reserve Capacity Model (Gallo & Matthews, 2003). This model attributes the reduction of resources to (a) the numerous stressful situations in which low SES individuals encounter and to (b) their difficulty to restore their reserve for future

challenges. Psychological resources (Elliot & Chapman, 2016), also referred to as personal resources, are necessary for resilience and emotion regulation in the face of adversity (Hobfoll, Johnson, Ennis, & Jackson, 2003). Psychological resources dwindle with each challenge and threat, increasing negative emotional response, which can subsequently lead to perceiving ambiguous situations as more unfair (Chen & Matthews, 2001). Outside the context of household chores, stressful experiences are known to play a role in perceptions of fairness. For example, a study by Schwartzberg and Janoff-Bulman (1991) showed that college students who had recently lost a parent displayed more negative beliefs about justice and fairness compared with those who had not recently experienced a loss. In all, the Reserve Capacity Model predicts that individuals of lower SES experience a greater reduction of psychological resources that are needed to form perceptions of fairness and, in line with the Equity Theory, perceptions of unfairness lead to increased distress that, in turn, have downstream consequences for health and well-being.

### Implications for Physical Health and Sleep

Time spent conducting housework is often referred to as a second shift (Hochschild, 1989). Returning home from work only to conduct more work (household chores) may lead to mental and physical exhaustion because of a lack of recovery from that day. In line with this idea, Saxbe, Repetti, and Graesch (2011) found that failure to recover after a work day because of involvement in household chores leads to elevated nighttime cortisol levels, which has been associated with poor physical health outcomes (e.g., Sephton, Sapolsky, Kraemer, & Spiegel, 2000). This holds especially true for lower SES individuals who, on average, end their day with fewer psychological resources and show greater difficulty restoring these lost resources compared with those of higher SES. Indeed, Hobfoll et al. (2003) show that in low SES women, a loss of resources elicits distress and increases negative affect. In line with the Reserve Capacity Model, we suspect that the negative affective state may cloud judgments of fairness. Additionally, Jackson, Kubzansky, and Wright (2006) propose that chronic perceived unfairness poses as a psychological stressor that predicts adverse, long-term health outcomes such as allostatic load and mortality. Elovainio et al. (2010) found that men who perceived themselves to be treated unfairly in the workplace showed elevated levels of depression and biological markers of inflammation 13.5 years later. In the current paper, we utilize a self-reported measure of physical health and an additional behavioral health measure previously shown to be associated with perceived fairness: sleep.

Sleep (i.e., sleep dysfunction) is associated with a variety of health endpoints, such as inflammation (Friedman, 2011), body mass index (Mezick, Wing, & McCaffery, 2014), and mortality (Hublin, Partinen, Koskenvuo, & Kaprio, 2007). Like well-being and physical health, sleep quality can also be disrupted by perceptions of unfairness. Although no study to our knowledge has examined perceived fairness and sleep dysfunction within the context of household chores, previous work has explored perceived fairness and sleep in other contexts. A study by Greenberg (2006) found that in a sample of nurses, those who were underpaid and who perceived this as unfair displayed higher levels of insomnia immediately as well as 6 months later. In the article, the author suggests that insomnia developed as a result of the stress initiated

by perceptions of unfairness. It should be noted that perceptions of (un)fairness are products of the environment and are likely to produce long-term effects within the context of household chores similar to that of the workplace. We predict that perceiving the allocation of housework as unfair may lead to detrimental long-term effects on marital quality, well-being, health, and sleep.

Additionally, previous research has shown that age and sex impact time spent on household chores with older adults and women spending more time on daily housework (Wong & Almeida, 2013). Furthermore, older age is associated with worse physical health (Geist & Tabler, 2018), better well-being (Stone, Schwartz, Broderick, & Deaton, 2010), and better marital quality (Gorchoff, John, & Helson, 2008). Additionally, hours of paid work is a factor that partners consider when negotiating the household chore distribution; often the spouse who works fewer hours each week contributes more time to household chores (Thomas et al., 2018). Thus, age, sex, and paid work hours were included as covariates to adjust for confounding effects they may have on the outcome variables.

### The Present Research

In the current study, we analyzed prospective links between household chores hours, perceived fairness, and SES with (a) well-being, (b) marital quality, (c) self-rated physical health, and (d) sleep dysfunction, expecting that a greater number of hours spent conducting household chores would predict lower hedonic and eudaimonic well-being, poorer marital quality, poorer physical health, and greater sleep dysfunction 10 years later (Hypothesis 1). We also examined perceived fairness as a potential indirect pathway linking time spent on household chores and the proposed outcomes (Hypothesis 2). Finally, to expand on factors contributing to the relationship between household chores and perceived fairness, we tested whether SES would moderate this association. We expected an indirect link between household chores hours and prospective measures of hedonic well-being, eudaimonic well-being, marital quality, physical health, and sleep dysfunction through perceived fairness to be moderated by SES (Hypothesis 3).

### Method

#### Sample and Procedure

Participants were drawn from the National Survey of Midlife Development in the United States (MIDUS). MIDUS is a three-wave panel survey on health and well-being among adults between the ages of 25 and 74 years. Data were collected via phone interviews and self-administered questionnaires in 1995–1996 (Wave 1), 2004–2006 (Wave 2), and 2013–2014 (Wave 3). For the present study, Wave 1 (W1;  $N = 7,108$ ) and Wave 2 (W2;  $N = 4,963$ ) were chosen because (a) they provide the possibility to test our hypotheses prospectively from W1 to W2 and (b) sleep dysfunction was collected only in W2. A subsample of 1,255 individuals also participated in the Biomarkers Study (Dienberg Love, Seeman, Weinstein, & Ryff, 2010), which was the source of sleep assessments for the present analysis and occurred an average of 25 months ( $SD = 14$  months) following the main W2 questionnaires.

Eligibility criteria for the current study required that participants were married or cohabiting with their partner across both waves.

Seventy-one percent of respondents ( $N = 5,025$ ) identified themselves as married at W1. Of these, 3,207 participants identified themselves as married at W2. Because the MIDUS survey did not measure whether the participants were married to the same person, following previous MIDUS studies (e.g., Selcuk, Gunaydin, Ong, & Almeida, 2016), we selected participants if they met at least one of these criteria: (a) The date of marriage recorded from W2 was before W1, (b) the date of marriage for W1 was the same as the date for W2, or (c) the number of marriages the participant reported in W1 was equal to those reported in W2. Therefore, the final study sample consisted of 2,644 married adults ( $M = 46.61$  years,  $SD = 11.87$ , range = 25–74 years, 95.7% White, 47% had children under the age of 18 years at W1). Of these, 544 individuals also participated in the Biomarkers Study. Respondents reported that their partners completed an average of 12.75 hours of housework ( $SD = 11.32$ ) and 36.96 hours of paid work ( $SD = 7.76$ ) per week (descriptive statistics for respondents found in Table 1). All participants provided informed consent. The current study was deemed exempt by the Institutional Review Board at Wayne State University because of the participant's anonymity within this publicly available secondary data.

### Measures

**Household chores hours.** The number of hours that one spent on household chores was measured in W1 by one question contained within a battery of items regarding household chores, "In a typical week, about how many hours do you generally spend doing household chores?" At the beginning of the battery, a statement provided guidance as to what should be considered a chore (i.e., cooking, laundry, cleaning, etc.), clarified that respondents should not include child rearing tasks, and indicated that the respondent should answer in reference to their significant other. Participants' responses ranged from 0 to 120 hours. To reduce unlikely answers (3.4%), responses were winsorized to  $+3 SD$  from the mean; the winsorized range of values spanned from 0 to 40 hours per week, resulting in a normal distribution without extreme values.

**Perceived fairness.** This single item was also a component of the household chores battery in W1 and was measured by the question, "How fair do you think this arrangement of household chores is to you?" as used by Barrett and Raphael (2018). Responses were given on a 4-point scale (1 = *very fair* to 4 = *very unfair*). The item was then reverse scored, with higher scores reflecting greater perceptions of fairness.

**Objective socioeconomic status.** A composite was created in W1 by collecting four common items of objective SES (Hartanto, Lee, & Yong, 2019). Specifically, objective measures were captured through (a) the respondent's education (1 = *no school/some grade school* to 12 = *PHD, MD, EDD, and other professional degrees*) in which 6.2% had less than a high school diploma, 48.5% graduated from high school, 32.8% completed a college/university, and 12.5% pursued a postgraduate degree; (b) partner's education in which 7.4% had less than a high school diploma, 47.9% graduated from high school, 31% completed college/university, and 13.7% pursued a postgraduate degree; (c) a respondent's and partner's income during the past 12 months (1 = *less than \$0* to 31 = *\$100,000 or more*;  $M = \$56,170$ ,  $SD = \$39,208$ , *median* = \$50,000); and (d) alternative sources of family income: social security retirement benefits (1 = *less than \$0* to 23 =

Table 1  
Correlations and Descriptive Statistics Among Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Household chores hours	—														
2. Perceived fairness	-.19**	—													
3. SES	-.05*	.09**	—												
4. Hedonic well-being (W1)	-.05**	.20**	.13**	—											
5. Eudaimonic well-being (W1)	-.05**	.19**	.20**	.60**	—										
6. Marital quality (W1)	-.05**	.39**	.07**	.44**	.37**	—									
7. Physical health (W1)	-.03	.07**	.22**	.32**	.28**	.14**	—								
8. Hedonic well-being (W2)	-.05*	.18**	.13**	.59**	.46**	.34**	.34**	—							
9. Eudaimonic well-being (W2)	-.05*	.21**	.21**	.48**	.64**	.34**	.31**	.63**	—						
10. Marital quality (W2)	-.05**	.27**	.09**	.34**	.29**	.63**	.13**	.46**	.39**	—					
11. Physical health (W2)	-.04*	.05*	.23**	.22**	.24**	.08**	.54**	.37**	.29**	.08**	—				
12. Sleep dysfunction (W2)	.09*	-.16**	-.10*	-.27**	-.17**	-.09*	-.29**	-.31**	-.16**	-.06	-.30**	—			
13. Age	.03*	.13**	.16**	.11**	.01	.12**	-.12**	.12**	.03	.17**	-.18**	-.03	—		
14. Sex <sup>a</sup>	.45**	-.25**	-.08**	-.05*	-.07**	-.04*	-.05*	-.05*	-.05**	-.10**	-.01	.14**	-.09**	—	
15. Hours of paid work	-.20**	.06**	-.03	-.02	.01	.00	-.02	.00	-.01	.03	.00	.03	-.01	-.19**	—
<i>M</i>	13.40	3.28	1.35	0.00	17.00	0.00	3.69	0.00	16.76	0.00	3.60	5.56	46.61	—	36.63
<i>SD</i>	10.21	0.84	2.61	0.83	2.19	0.76	0.91	0.80	2.12	0.77	0.99	3.22	11.87	—	8.07

Note. W1 = wave 1; W2 = wave 2; SES = socioeconomic status;  $N = 2,644$ ; sleep dysfunction ( $N = 544$ ). For continuous variables, higher scores reflect greater standing on that variable.

<sup>a</sup> 0 = male, 1 = female.

\*  $p < .05$ . \*\*  $p < .01$ .

\$25,000 or more;  $M = \$1,754$ ,  $SD = \$4,904$ ), government assistance (e.g., unemployment benefits, aid to dependent children, or general assistance; 1 = less than \$0 to 23 = \$25,000 or more;  $M = \$234$ ,  $SD = \$1,812$ ) and other sources of income (e.g., investments, child support, or alimony; 1 = less than \$0 to 31 = \$100,000 or more;  $M = \$12,989$ ,  $SD = \$27,186$ ). Alternative sources of income were added because 7.2% of the participants reported a total income lower than \$0 (i.e., no income/financial loss) and rely on these other sources of income for daily living. To avoid skewed results, measures were square root transformed, standardized, and then summed together to create the objective SES composite.

**Hedonic well-being.** In line with prior work (e.g., Gallagher, Lopez, & Preacher, 2009), we computed a measure of hedonic well-being at W1 and W2 comprised of three dimensions: life satisfaction, positive affect, and negative affect (e.g., Watson, Clark, & Tellegen, 1988). Life satisfaction (e.g., "Rate your life overall") was rated on a scale ranging from 0 (*worst*) to 10 (*best*). Participants rated how often they experienced 10 positive affective states (e.g., "full of life") and 11 negative affective states (e.g., "afraid") during the past 30 days (1 = *all of the time* to 5 = *none of the time*). A composite score was computed by reverse scoring the negative affect items, standardizing all items, and averaging the scores so that higher scores indicated higher levels of hedonic well-being;  $\alpha = .73$  (W1) and  $\alpha = .78$  (W2).

**Eudaimonic well-being.** Ryff's (1989) Psychological Well-Being scale was used for eudaimonic well-being in W1 and W2. The five subscales included were environmental mastery, personal growth, purpose in life, self-acceptance, and autonomy (e.g., "My decisions are not usually influenced by what everyone else is doing"). Each subscale was composed of seven items that were rated on a 7-point Likert scale (1 = *strongly agree* to 7 = *strongly disagree*). The sixth subscale, positive relations with others, was excluded from the current study because a sample of married couples would skew the responses for this particular subscale

(Selcuk et al., 2016). Items within each subscale were summed, and then the five subscales were averaged so higher scores indicated greater levels of eudaimonic well-being;  $\alpha = .72$  (W1) and  $\alpha = .77$  (W2).

**Marital quality.** Five components were used to measure marital quality at W1 and W2 as conducted in previous MIDUS studies (e.g., Grzywacz & Marks, 2000). The composite included four items that assessed partner decision making, three items that determined marital disagreement, six items that evaluated partner support, six items that measured partner strain, and two items that assessed prediction of relationship longevity (e.g., "Realistically, what do you think the chances are that you and your partner will eventually separate?"). Each of the five components was standardized and averaged whereby higher composite scores indicated greater standing on the variable;  $\alpha = .86$  (W1) and  $\alpha = .87$  (W2).

**Physical health.** Self-rated physical health was measured at W1 and W2 through a single item, "In general, would you say your physical health is excellent, very good, good, fair, or poor?" This item was reverse scored so that higher scores indicated greater levels of health. Global self-ratings of health, similar to this one, have been found to predict poor health trajectories in older adults, including a greater risk of mortality (Benyamini & Idler, 1999).

**Sleep dysfunction.** Sleep dysfunction was assessed during the W2 Biomarker Study by the 19-item Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), which is known to have good psychometric properties and to correlate with objective measures of sleep (Buysse et al., 1989). Measures of sleep dysfunction were subjective responses to seven components including sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction. The components were recoded so that each scale ranged from 0 to 3 and summed so that higher scores corresponded to worse sleep quality.

**Covariate measures.** Demographic covariates from W1 included age, sex (dummy-coded as 0 = *male*, 1 = *female*; 50.9%

female), and hours of paid work measured by asking, “About how many hours do you work for pay in an average week on your main job?” Participants’ responses ranged from 2 to 100 hours. To reduce unlikely answers (13.25%), responses were winsorized to +3 *SD* from the mean. The winsorized range of values spanned from 0 to 40 hours per week, resulting in a normal distribution.

**Statistical analysis strategy.** All study variables from both W1 and W2 were analyzed for missing data—except for sleep dysfunction, which was collected in a subsample of individuals. The total incidence of missing data among all study variables was 5.2%. Covariates and SES contained no missing data. The variables with the largest number of missing cases included household chores hours (6%) and perceived fairness (5%) at W1 as well as eudaimonic well-being, hedonic well-being, and marital quality each with 17% missing cases at W2. As recommended by Musil, Warner, Yobas, and Jones (2002) to examine the randomness of missing data, bivariate correlations were conducted between the variables dummy coded for missing data (i.e., W1 housework hours, W1 fairness, W2 well-being, W2 marital quality) and the study variables with complete data (i.e., work hours, age, SES, W2 health). Missing data on each of the five variables were associated with being younger and of poorer health. Missingness was not associated with paid work hours or SES. Following previous research (e.g., Stanton, Selcuk, Farrell, Slatcher, & Ong, 2019) to address potential analytic problems related to data missing at random, we imputed missing values using the expectation maximization algorithm for W1 household chores hours, W1 perceived fairness, W2 eudaimonic and hedonic well-being, and W2 marital quality. This technique allows for less biased parameter estimates and improved statistical power when data are missing at random (Scheffer, 2002).

Multiple regression was used to test whether household chores hours, perceived fairness, and SES at W1 would predict hedonic and eudaimonic well-being, marital quality, physical health, and sleep dysfunction at W2. Predictor variables were mean centered prior to conducting regression analyses. We tested whether perceived fairness (W1) functioned as a mechanism through which household chores hours (W1) influenced the outcome variables (W2) using PROCESS macro for SPSS, Model 4 (Hayes, 2013). Bias-corrected confidence intervals for the indirect association were estimated based on 5,000 bootstrap samples. We then tested whether SES moderated these mediated effects using PROCESS macro for SPSS, Model 7 (Hayes, 2013). Simple-slope analyses, controlling for covariates, were conducted to interpret significant interactions. For sensitivity analysis, two models were tested per analysis (Spector & Brannick, 2011). Model 1 excluded covariates, whereas Model 2 included covariates.

**Results**

Descriptive statistics and correlations among study variables are provided in Table 1.

**Main Effect of Household Chore Hours on Outcomes (Hypothesis 1)**

Table 2 displays the multiple linear regression analyses of household chores hours predicting hedonic and eudaimonic well-being, marital quality, physical health, and sleep dysfunction at

Table 2  
Regression Models Predicting Well-Being, Marital Quality, Health, and Sleep

Variables	Hedonic well-being Wave 2		Eudaimonic well-being Wave 2		Marital quality Wave 2		Physical health Wave 2		Sleep dysfunction Wave 2	
	Model 1 (R <sup>2</sup> = .04) b (SE)	Model 2 (R <sup>2</sup> = .05) b (SE)	Model 1 (R <sup>2</sup> = .08) b (SE)	Model 2 (R <sup>2</sup> = .08) b (SE)	Model 1 (R <sup>2</sup> = .08) b (SE)	Model 2 (R <sup>2</sup> = .09) b (SE)	Model 1 (R <sup>2</sup> = .05) b (SE)	Model 2 (R <sup>2</sup> = .10) b (SE)	Model 1 (R <sup>2</sup> = .04) b (SE)	Model 2 (R <sup>2</sup> = .05) b (SE)
Household chores hours	-0.01 (.00)	-0.01 (.00)	-0.01 (.00)	0.00 (.01)	0.01 (.00)	0.00 (.00)	0.00 (.00)	0.00 (.00)	0.03 (.01)	0.01 (.02)
Perceived fairness	0.16 (.02)***	0.15 (.02)***	0.50 (.05)***	0.50 (.05)***	0.23 (.02)***	0.21 (.02)***	0.03 (.02)	0.06 (.02)**	-0.47 (.16)**	-0.52 (.16)**
SES	0.03 (.01)***	0.03 (.01)***	0.16 (.02)***	0.17 (.02)***	0.02 (.01)**	0.01 (.01)*	0.09 (.01)***	0.10 (.01)***	-0.11 (.06)*	-0.12 (.06)*
Age	0.01 (.00)	0.01 (.00)	0.00 (.00)	0.00 (.00)	0.01 (.00)	0.01 (.00)	0.01 (.00)	-0.02 (.00)***	0.01 (.01)	0.01 (.01)
Sex <sup>a</sup>	0.02 (.04)	0.02 (.04)	0.06 (.10)	0.06 (.10)	-0.03 (.03)	-0.03 (.03)	0.03 (.05)	0.03 (.05)	0.63 (.32)*	0.63 (.32)*
Paid work hours	0.00 (.00)	0.00 (.00)	-0.01 (.01)	-0.01 (.01)	0.00 (.00)	0.00 (.00)	0.00 (.00)	0.00 (.00)	0.00 (.02)	0.03 (.02)

Note. SES = socioeconomic status. N = 2,644; sleep dysfunction (N = 544). Model 1 = analysis excluding covariates; Model 2 = analysis including covariates. For continuous variables, higher scores reflect greater standing on that variable.

<sup>a</sup> 0 = male, 1 = female.

\* p < .05. \*\* p < .01. \*\*\* p < .001.

W2 (Hypothesis 1). Household chores hours did not have a direct effect on any outcome variable with or without including covariates; thus, Hypothesis 1 was not supported. Perceived fairness and SES directly predicted each outcome.

### Mediation Analyses (Hypothesis 2)

In support of Hypothesis 2, analyses revealed that W1 household chores hours were indirectly linked via W1 perceived fairness to lower W2 hedonic well-being (95% confidence interval [CI] Model 1  $[-0.0036, -0.0018]$ , Model 2  $[-0.0022, -0.0008]$ ), lower W2 eudaimonic well-being (95% CI Model 1  $[-0.0113, -0.0062]$ , Model 2  $[-0.0073, -0.0028]$ ), lower W2 marital quality (95% CI Model 1  $[-0.0048, -0.0028]$ , Model 2  $[-0.0029, -0.0011]$ ), worse W2 physical health (95% CI Model 1  $[-0.0015, -0.0001]$ , Model 2  $[-0.0013, -0.0003]$ ), and greater sleep dysfunction (95% CI Model 1  $[0.0027, 0.0158]$ ). However, no indirect effect was found linking W1 household chores hours to W2 sleep dysfunction via W1 perceived fairness after accounting for covariates (95% CI Model 2  $[-0.0017, 0.0075]$ ).

### Moderated Mediation Analyses (Hypothesis 3)

We then ran moderated mediation models (for a graphical representation, see Figure 1) to test whether the prospective indirect effects of W1 household chores hours on W2 outcomes through W1 perceived fairness were moderated by W1 SES (Hypothesis 3). Simple slopes of the longitudinal analyses are presented in Figure 3.

First, analyses revealed that SES moderated the relationship between household chores hours and perceived fairness (Model 1  $[b = 0.002, t = 2.72, p = .007]$ , 95% CI  $[0.0005, 0.0029]$ ; Model 2  $[b = 0.002, t = 2.85, p = .004]$ , 95% CI  $[0.0005, 0.0029]$ ; see Figure 2). After adjusting for covariates, simple slopes indicated that household chores hours were negatively associated with perceived fairness in individuals of low SES ( $-1 SD$ ; 95% CI  $[-0.0169, -0.0082]$ ) but not for those of high SES ( $+1 SD$ ; 95% CI  $[-0.0084, 0.0014]$ ). We then found that in low SES individuals, perceived fairness significantly linked hours of household chores to each predicted outcome: W2 hedonic well-being (Figure 3, Panel A;  $-1 SD$ ; 95% CI Model 1

$[-0.0045, -0.0022]$ , Model 2  $[-0.0030, -0.0011]$ ), W2 eudaimonic well-being (Figure 3, Panel B;  $-1 SD$ ; 95% CI Model 1  $[-0.0140, -0.0075]$ , Model 2  $[-0.0101, -0.0040]$ ), W2 marital quality (Figure 3, Panel C;  $-1 SD$ ; 95% CI Model 1  $[-0.0060, -0.0033]$ , Model 2  $[-0.0040, -0.0017]$ ), W2 physical health (Figure 3, Panel D;  $-1 SD$ ; 95% CI Model 1  $[-0.0019, -0.0001]$ , Model 2  $[-0.0019, -0.0004]$ ), and W2 sleep dysfunction (Figure 3, Panel E;  $-1 SD$ ; 95% CI Model 1  $[0.0040, 0.0208]$ , Model 2  $[0.0001, 0.0125]$ ). Additionally, for higher SES individuals, perceived fairness mediated only the link between hours of household chores to the predicted outcomes in models not containing covariates (W2 hedonic well-being:  $+1 SD$ ; 95% CI Model 1  $[-0.0028, -0.0010]$ , Model 2  $[-0.0014, 0.0002]$ ; W2 eudaimonic well-being:  $+1 SD$ ; 95% CI Model 1  $[-0.0086, -0.0031]$ , Model 2  $[-0.0048, 0.0006]$ ; W2 marital quality:  $+1 SD$ ; 95% CI Model 1  $[-0.0038, -0.0014]$ , Model 2  $[-0.0019, 0.0003]$ ; and W2 physical health:  $+1 SD$ ; 95% CI Model 1  $[-0.0012, -0.0001]$ , Model 2  $[-0.0008, 0.0001]$ ). Lastly, there was no link between household chores hours and W2 sleep dysfunction via perceived fairness for high SES individuals (95% CI Model 1  $[-0.0009, 0.0129]$ , Model 2  $[-0.0101, 0.0034]$ ).

These results were confirmed by the significant indices of moderated mediation—(W2 hedonic well-being,  $b = 0.001$ ,  $SE = 0.000$ , 95% CI  $[0.0001, 0.0005]$ ; W2 eudaimonic well-being,  $b = 0.001$ ,  $SE = 0.001$ , 95% CI  $[0.0003, 0.0017]$ ; W2 marital quality,  $b = 0.001$ ,  $SE = 0.000$ , 95% CI  $[0.0001, 0.0007]$ ; W2 physical health,  $b = 0.001$ ,  $SE = 0.000$ , 95% CI  $[0.0000, 0.0003]$ ; and W2 sleep dysfunction,  $b = -0.014$ ,  $SE = 0.001$ , 95% CI  $[-0.0038, -0.0001]$ )—which represents the slope of the line for the association between the moderator (i.e., W1 SES) and the indirect effect (Hayes, 2013).

We additionally wanted to ensure that the effects seen for the W2 outcomes were due to the housework-related predictors. Thus, we analyzed the indirect effects of W1 household chores hours on the W2 outcomes through W1 perceived fairness while controlling for W1 assessments of the outcome variables (hedonic, eudaimonic well-being, marital quality, and physical health at W1). We found that W1 household chores hours predicted both W2 hedonic and W2 eudaimonic well-being via

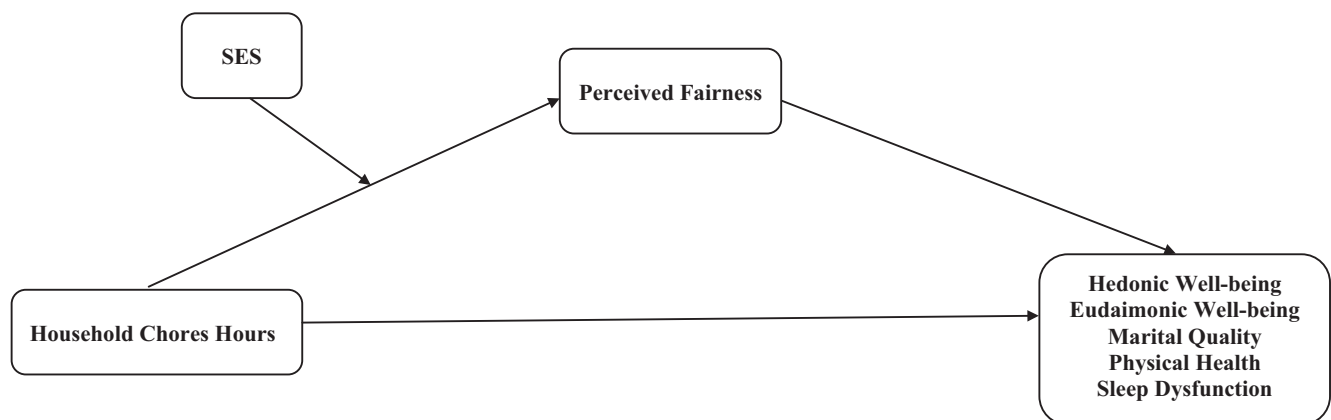


Figure 1. The predicted moderated mediation model depicts the indirect effect of household chores hours on hedonic well-being, eudaimonic well-being, marital quality, physical health, and sleep dysfunction through perceived fairness and conditional upon SES. SES = socioeconomic status.

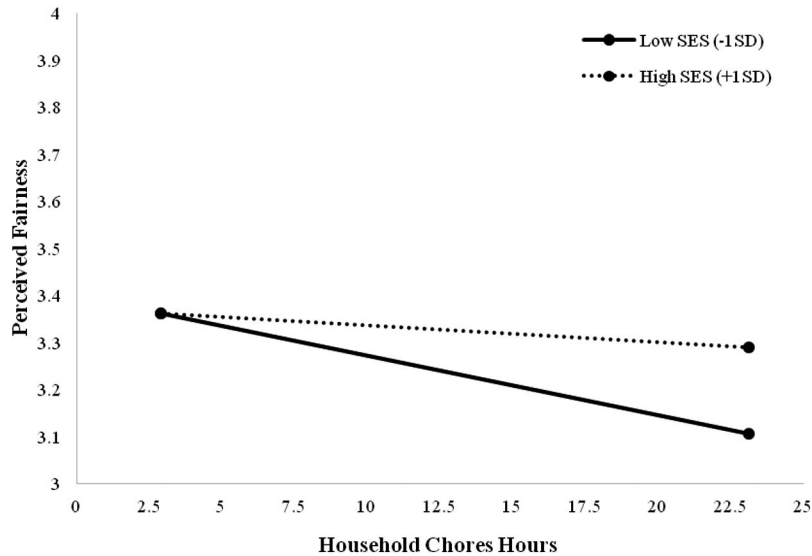


Figure 2. The interaction between household chores hours and SES predicts perceived fairness in married adults. SES = socioeconomic status.

W1 perceived fairness in those who reported lower SES ( $-1 SD$ ; 95% CI for hedonic well-being  $[-0.0011, -0.0002]$ , 95% CI for eudaimonic well-being  $[-0.0048, -0.0017]$ ) but not higher SES ( $+1 SD$ ; 95% CI for W2 hedonic  $[-0.0005, 0.0001]$ ; 95% CI for eudaimonic well-being  $[-0.0021, 0.0004]$ ). However, we did not find a conditional indirect effect of W1 household chores hours on W2 marital quality via W1 perceived fairness at low SES ( $-1 SD$ ; 95% CI  $[-0.0004,$

$0.0002]$ ) or high SES ( $+1 SD$ ; 95% CI  $[-0.0002, 0.0001]$ ) or in W2 physical health at low SES ( $-1 SD$ ; 95% CI  $[-0.0009, 0.0001]$ ) or high SES ( $+1 SD$ ; 95% CI  $[-0.0005, 0.0001]$ ) controlling for W1 outcome variables.

In summary, greater levels of household chores hours at W1 were indirectly associated with lower levels of hedonic well-being, eudaimonic well-being, marital quality, and physical health 10 years later via perceived fairness for both lower and higher SES

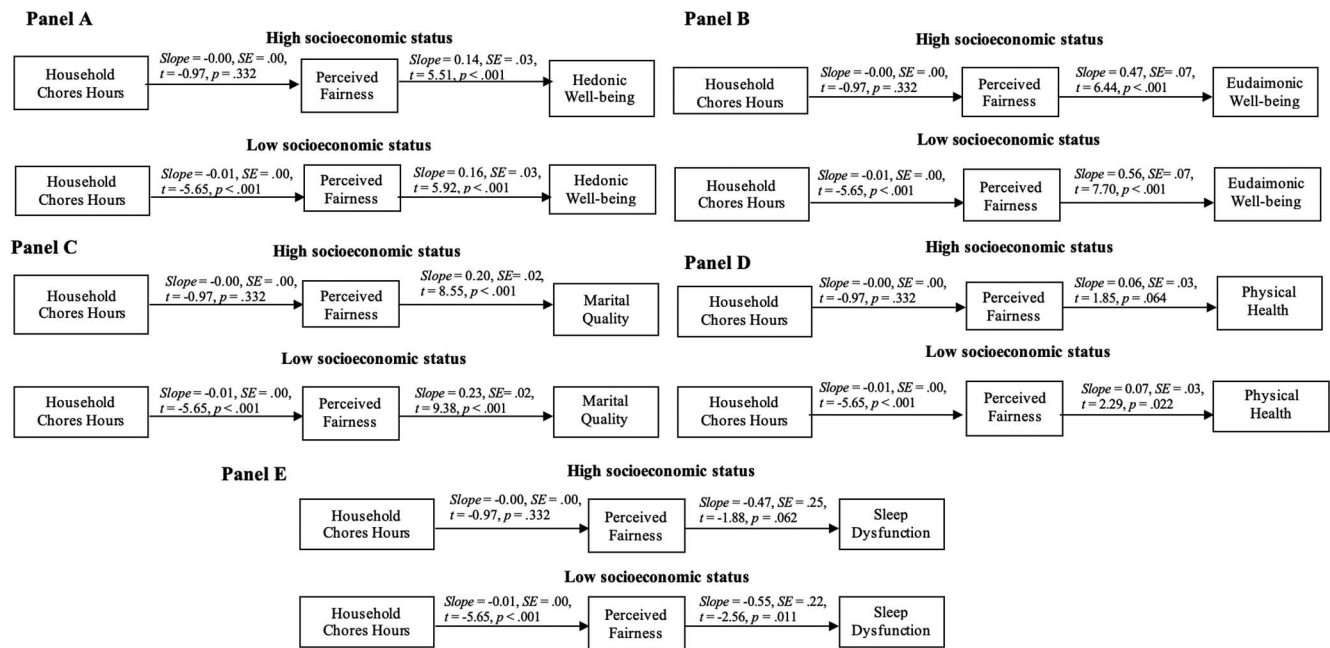


Figure 3. The longitudinal associations (10-year follow-up) between household chores hours, perceived fairness, and hedonic well-being (Panel A), eudaimonic well-being (Panel B), marital quality (Panel C), physical health (Panel D), and sleep dysfunction (Panel E) among high and low SES individuals. SES = socioeconomic status.

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individuals. As predicted, after controlling for covariates, these same effects were found only for individuals of lower SES. Furthermore, when W1 outcome variables were included as covariates, perceived fairness only indirectly linked W1 household chores hours to W2 hedonic and eudaimonic well-being among lower SES but not higher SES individuals.

### Auxiliary Analyses

In addition to the analyses reported above, we also explored predictions from alternative theoretical models. Specifically, we drew from the Social Role Theory (Wood & Eagly, 2002), which suggests that women are socialized to be communal and focus on caring for others. Following this theory, we examined both sex differences in time spent on household chores and sex as moderator (along with SES) between household chores hours and perceived fairness. The results yielded statistically significant differences of household chores hours, depending on the participant's sex; that is, women reported more hours of household chores per week than men,  $t(2632) = -19.92, d = .85, p < .001 (M_{women} = 17.37, SD = 11.68, \text{vs. } M_{men} = 9.00, SD = 7.48)$ . Next, we tested whether sex and SES moderated the link between household chores hours and perceived fairness. The three-way interaction was not significant; that is, sex did not moderate the relationship between household chores hours and perceived fairness based on individuals' SES ( $b = 0.002, SE = .00, p = .123, 95\% \text{ CI } [-0.0006, 0.0052]$ ). Finally, we found that sex along with SES did not moderate the effect of W1 household chores hours on W2 hedonic well-being ( $95\% \text{ CI } [-0.0001, 0.0009]$ ), eudaimonic well-being ( $95\% \text{ CI } [-0.0003, 0.0029]$ ), marital quality ( $95\% \text{ CI } [-0.0001, 0.0012]$ ), or physical health ( $95\% \text{ CI } [-0.0001, 0.0004]$ ). However, sex and SES did moderate the effect of W1 household chores hours on W2 sleep dysfunction ( $95\% \text{ CI } [-0.0123, -0.0012]$ ), via W1 perceived fairness. Simple slope analyses indicated that household chores hours led to sleep dysfunction only for women of low SES ( $-1 \text{ SD}; 95\% \text{ CI } [0.0011, 0.0182]$ ). Household chores hours did not significantly lead to sleep dysfunction for women of high SES ( $+1 \text{ SD}; 95\% \text{ CI } [-0.0156, 0.0027]$ ) or for men of high SES ( $+1 \text{ SD}; 95\% \text{ CI } [-0.0013, 0.0313]$ ), or low SES ( $-1 \text{ SD}; 95\% \text{ CI } [-0.0126, 0.0060]$ ).

These results indicate that females, indeed, complete more hours of housework compared with their male counterparts. However, when sex was added to the model, in addition to SES, perceived fairness only indirectly linked household chores to sleep dysfunction for lower SES women and there was no effect on any of the other outcome variables.

### Discussion

Existing studies suggest that unfair perceptions of household chores can negatively impact marital quality and well-being (Lively et al., 2010; Ruppanner et al., 2018). However, until now, the consequences of household chores on physical health and the underlying mechanisms have seldom been explored. In a large sample of married adults, we found that the number of hours spent on household chores did not predict any of the long-term outcome variables (i.e., well-being, marital quality, physical health, and sleep). However, there was a significant indirect effect linking

household chores hours to well-being, marital quality, and physical health through perceived fairness 10-years later. The results held significance with and without controlling for sex, age, and paid work hours. Furthermore, indirect effect of perceived fairness linking household hours to sleep dysfunction was found only in models without covariates. Bolstering work on the Equity Theory (Adams, 1965), the longitudinal results suggest that perceptions of unfairness produce distress, that when expressed chronically, can detrimentally impact health and well-being. Our findings also corroborate and extend prior work proposing perceived fairness as a mediator for the link between household chores hours and marital quality (Lavee & Katz, 2002) and well-being (Lively et al., 2010).

The current work identified SES as a factor that contributes to perceived fairness about household chores. Results indicated that perceived fairness is an important mechanism across the SES spectrum. Accordingly, we find that higher SES individuals, who are more likely to outsource household work and face fewer daily stressors, still perceive doing household chores as less fair when age, sex, and paid work hours were not accounted for (Schneider & Hastings, 2017). However, effects were stronger among those of lower SES, suggesting that perceived (un)fairness has larger consequences among these individuals. Furthermore, when controlling for covariates, the deleterious impact of perceived unfairness on well-being, marital quality, physical health, and sleep was apparent only in lower SES individuals. Following the Reserve Capacity Model, these results suggest that those who report lower SES compared with those who report higher SES tend to experience poorer health outcomes—presumably via increased stress and reduced psychological resources, an idea that should be directly tested in future research.

In addition to controlling for age, sex, and paid work hours, we additionally considered that the observed effects may be due to baseline levels of health and well-being. For this reason, we ran subsequent moderated mediation analyses (Hypothesis 3) controlling for W1 measures of hedonic well-being, eudaimonic well-being, marital quality, and physical health. The results indicated that W1 perceived fairness mediated the association between W1 household chores and W2 hedonic and eudaimonic well-being among lower SES but not higher SES individuals. The results did not hold for physical health or marital quality, which could be because baseline levels of these measures contributed more to long-term health and well-being than did housework hours. In all, not only do lower SES individuals perceive household chores as less fair, but also cumulative distress resulting from daily perceived inequality about housework leads to worse well-being outcomes 10 years later, compared with their higher SES counterparts.

The pervasive effects of household chores across various life domains among lower SES married couples suggest the need to establish differential strategies in marital therapy interventions. Research has shown that disagreement over household chores leads to conflict (Kluwer, Heesink, & Van de Vliert, 1996) and even divorce and that these issues are due to perceptions of unfairness (Newkirk et al., 2017), which can differ across the socioeconomic gradient. This study finds that, in line with the Reserve Capacity Model, individuals of lower SES are more likely to perceive household chores as unfair—independent of whether the actual situation is fair or not—and that there are negative



implications of perceived unfairness. This difference suggests that marital therapy should consider distinct interventions for conflict related to housework, including targeting issues related to the accumulation of stressors that lead to increased negative affect and perceptions of unfairness in lower SES populations.

There are limitations to the current study that should be noted when interpreting results. The first is that a high number of MIDUS participants are White and come from middle- and upper-income strata. Future studies extending this work would benefit from drawing from more socioeconomically and ethnically diverse samples. Additionally, the single measure of household chores hours was a subjective, retrospective question that could have been faulty to a variety of interpretations or inaccurate recall responses. Studies interested in hours spent on household chores should consider a more objective measure of housework.

Furthermore, our supplemental analyses indicate that women report completing more hours of household chores per week; however, they did not perceive this distribution as unfair, nor did they show no worse well-being, marital quality, or physical health compared with their male counterparts. The only effect found was that women of lower SES experience greater sleep dysfunction compared with women of higher SES when time spent on household chores was perceived as unfair. However, because of the global nature of the housework item, there are many details about specific chores and the chore distribution that we were unable to assess to further probe this effect. One aspect of household chores that is of particular interest is that many chores do not have much flexibility over when they can be completed and are required habitually, such as cooking meals, doing laundry, and washing dishes (Coltrane, 2000). These tasks are also considered traditionally feminine chores (Orbuch & Eyster, 1997). On the other hand, traditionally masculine chores (Blair & Lichter, 1991) do have flexibility over when they can be completed and are not required as regularly (e.g., lawn care, home repairs, and car maintenance). Whereas typical masculine tasks may take longer and be more physically taxing, they are not usually daily occurrences, nor do they require the same time pressure that is required of typical feminine tasks. It is well established that daily stressors are commonly responsible for a variety of health outcomes (Seeman et al., 2004). Thus, it may be that these traditionally feminine tasks function as daily and recurrent stressors, exhibiting the greatest influence over perceived fairness and well-being outcomes. Future studies may benefit from observing not only how much time is spent on housework but also the nature of the task in which individuals engage.

Lastly, it is important to note that in the current set of analyses, housework was analyzed per individual as opposed to at the couple level. Thus, future studies should utilize actor-partner models and calculate the relative number of housework hours each partner conducts for a more complete understanding of the dynamics occurring within romantic relationships. Despite these limitations, we should highlight that the utilization of a large sample of married and cohabiting adults, the incorporation of prospective analyses, and the inclusion of a broad range of well-being and health facets are notable strengths of this study.

In summary, household chores are necessary tasks, but perceiving the amount of time spent on these tasks as unfair can produce long-term negative consequences on health, well-being, and relationship quality. A key contribution of this study stems from

introducing participants' SES as a factor to determine specifically who are more likely to perceive household chores hours as unfair. Daily stress and depleted psychological resources may be necessary to understand why perceived fairness differs according to SES and may help marital intervention researchers develop specialized intervention strategies for couples across the socioeconomic spectrum. We hope that this research will open up other avenues for future work on how psychosocial processes and outcomes differ between social classes.

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