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The days add up: Daily marital discord and depressive reactivity linked to past-month depressed mood and marital risk across 10 years

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Abstract

Marital discord fuels depression, according to decades of research. Most prior studies in this area have focused on macro-longitudinal change in depression over the course of years, and on global ratings of marital satisfaction. Less work has examined fluctuations in depressed mood and marital discord in daily life, and none has investigated associations of short-term patterns with longer-term depressed mood and marital outcomes. Using data from participants in the Midlife in the U.S. project, the current study examined daily associations between marital discord and depressed mood, as well as their links to concurrent and prospective patterns of past-month depressed mood and marital risk. Results showed that, on average, depressed mood rose on days when individuals had an argument or tension with their spouse (i.e., marital discord), after accounting for the roles of other stressors. More frequent daily marital discord was also associated with greater past-month depressed mood and marital risk, above and beyond prior levels. Those with larger depressive mood responses to discord in daily life (i.e., greater reactivity) exhibited higher concurrent past-month depressed mood and greater 10-year increases in depressed mood. As the first study to link daily marital patterns to concurrent and prospective changes in depressed mood and marital outcomes, this investigation uncovered two novel processes—daily marital discord and depressive reactivity—as important for understanding long-term patterns of marital risk and depression.

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Introduction

Among couples, depression is closely related to the stress of marriage. Clinical work with couples seeking marital therapy in the early 1990s revealed that those in treatment for marital issues also routinely coped with depression (Beach et al., 1990). Such observations provided the foundation for Beach et al.'s *Marital Discord Model of Depression,* which posits that those in distressed marriages face an increased risk for depression diagnosis, particularly when negative thoughts about the marriage generalize to other aspects of life. The daily dynamics that give rise to and sustain the links between marital discord and depression remain poorly understood. A few ecological momentary assessment (EMA) studies have examined daily relationship processes and negative affect in small, targeted samples (Auger et al., 2017; Brock et al., 2019; Smith et al., 2012), but none have investigated discrete marital events as predictors of daily depressed mood, or linked short-term marital patterns to long-term outcomes. In the current study, we examined how daily marital discord, and day-to-day associations between marital discord and depressed mood, were linked to both past-month depressed mood and marital risk (i.e., the degree to which the relationship is perceived to be unstable or at risk) across 10 years. This multiple timescale approach leverages the strengths of both macro- and micro-longitudinal research designs. Indeed, we were able to not only examine the everyday dynamics that are often overlooked in studies focused solely on macro-longitudinal timescales, but also evaluate their direct associations with changes in depressed mood and marital risk across 10 years.

Long-term change in depressed mood in the context of marriage

Marital discord is a robust predictor of depressive symptoms among community couples (Proulx et al., 2007). Prospective research has even shown that baseline marital discord predicts change in depressive symptoms 2 years later among middle-aged and older adults (Whisman & Uebelacker, 2009). Thus, it is widely accepted that marital discord plays a salient role in predicting depressive symptoms over long periods of time, with marital discord and depression forming a vicious, mutually reinforcing cycle.

Links between short-term processes and long-term change

Lifespan developmental researchers have underscored the value of multiple timescale approaches by outlining the potential for short-term processes to shift more gradual changes in development (Magnusson & Cairns, 1996; Repetti et al., 2011). Repetti and colleagues' (2011) gear metaphor helpfully depicts the links between short-term reactions to stress and long-term change in health and well-being. The metaphor presents a series of three interlocked gears wherein a small gear, meant to represent stressful daily events,

turns another small gear, which signifies a person's short-term responses to those events. The two smaller gears turn a third, larger gear, which represents long-term change.

Negative marital interactions, and marital arguments in particular, play a central role in marital discord, which can fuel the onset, maintenance, and exacerbation of depressive symptoms (Beach et al., 1990). Empirical studies informed by the Marital Discord Model of Depression, however, have often operationalized marital discord in terms of individuals' global ratings of marital dissatisfaction (e.g., Whitton & Whisman, 2010). Full reliance on global marital dissatisfaction as a proxy for marital discord masks the specific routes through which marital discord influences depression over time. For decades, researchers have postulated that the more granular dynamics of marital interactions and mood may drive changes in mental health and marital function in ways that cannot be captured by global ratings (Beach & O'Leary, 1993). In line with this hypothesis, Whisman et al. (2002) showed that marital conflict in the laboratory was sufficient to trigger a significant depressive mood response among depressed and non-depressed partners alike. However, it remains unclear whether these patterns would unfold spontaneously in couples' daily interactions.

Drawing from lifespan developmental theory (Magnusson & Cairns, 1996) and Repetti et al.'s (2011) gear model, we extended this prior work by examining the frequency of marital discord *in daily life*, and individuals' mood changes with daily marital discord as short-term processes that may drive long-term change in depressed mood and marital risk across 10 years. We refer to the latter short-term process as *depressive reactivity*, which dovetails with the broader body of research on reactivity to daily stressors (Almeida, 2005).

Reactivity to daily stressors

According to a daily stress-process framework, daily hassles have the potential to influence short- and long-term well-being (Almeida, 2005). Further, links between daily stressors and well-being are, in part, a function of individuals' affective reactivity to such stressors. Affective reactivity to daily stressors represents the degree of change in a person's affect on days when stressors arise, relative to their affect on stressor-free days (Almeida, 2005). In fact, greater affective reactivity to daily stressors has been linked to increased risks for mental health problems up to 10 years later, apart from the mere occurrence of daily hassles (Charles et al., 2013). Reactivity to *interpersonal* stressors (e.g., arguments and interpersonal tension) is a potent predictor of change in depressive symptoms from one month to the next, compared to other types of daily stressors (O'Neill et al., 2004). In the current study, we extended these ideas to the context of marriage by examining the degree to which the frequency of daily marital discord and *depressive reactivity* to marital discord were each uniquely associated with change in depressed mood and marital risk across 10 years.

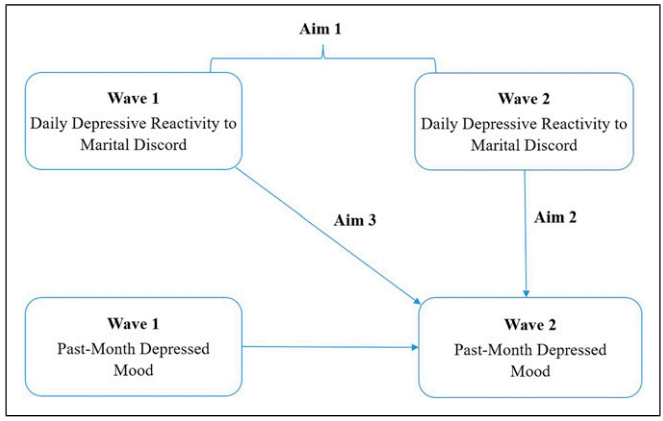

Figure 1. Structure of Modeling Framework Linking Short- and Long-Term Patterns of Depressed Mood and Marital Processes.

Note. Aim 1 examined within-person associations between daily marital discord and daily depressed mood at Waves 1 and 2. Aim 2 assessed daily depressive reactivity to discord as an everyday signature of concurrent past-month depressed mood at Wave 2, controlling for Wave 1 levels of past-month depressed mood, similar to Larson and Almeida's (1999) change model. Aim 3 examined daily depressive reactivity to discord at Wave 1 as a unique predictor of prospective changes in past-month over the subsequent decade, similar to Larson and Almeida's prospective change model. The same analyses were repeated with marital risk as outcome.

Reactivity in the context of marriage

Research on daily reactivity in the context of marriage has historically considered the daily linkage between marital transgressions and relationship evaluations, as opposed to depressed mood (e.g., Jacobson et al., 1982). More recent studies have considered how marital transgressions and daily marital perceptions relate to individuals' daily mood (Auger et al., 2017; Brock et al., 2019; Smith et al., 2012). Such findings reinforce Neff and Karney's (2009) speculation that our ability to understand how and why global evaluations of relationships change over time requires us to zoom in and consider the daily context of couples' relationships, including the frequency of marital tension, as well as individuals' reactivity to negative marital events. We aimed to expand this area of research by considering whether daily marital discord and depressive reactivity relates to long-term change in perceived marital risk, in addition to depressed mood. Indeed, according to Beach and Cassidy (1991), couples coping with depression and marital discord are often uncertain about the future of their relationship and may talk routinely about relationship dissolution. In this way, perceived marital risk can serve as a barometer for the extent of marital dysfunction and instability in the context of depressed mood and marital discord.

The current study

Adopting a multiple timescale approach that integrated short-term and long-term longitudinal dynamics, the current study examined the associations of daily marital discord

and daily depressed mood with past-month depressed mood and marital risk across 10 years in a national study of adults, using Waves 1 and 2 of the Midlife in the United States (MIDUS) project. To address Aim 1, depicted in Figure 1, we predicted that on average and across waves, depressed mood would be higher on days when individuals experienced marital discord (i.e., arguments and avoided arguments with the spouse). Seeking to maximize the available data from partnered individuals at both waves, we drew from Larson and Almeida's (1999) temporal framework to structure our multitemporal hypotheses. Aim 2 examined concurrent associations between daily marital and depressive patterns with past-month depressed mood and marital risk at Wave 2. Mirroring Larson and Almeida's change model, this enabled us to assess whether the short-term dynamics served as a unique hallmark of these long-term outcomes. Accordingly, we hypothesized that individuals who reported more frequent marital discord in daily life would have higher past-month depressed mood and marital risk, beyond their prior levels. In parallel, we predicted that individuals who showed larger upticks in depressed mood on days when they experienced marital discord (i.e., higher depressive reactivity) would also report elevated past-month depressed mood and marital risk. Aim 3 assessed the prospective change model, with the expectation that more frequent daily marital discord and greater daily depressive reactivity to discord would be associated with larger increases in past-month depressed mood and marital risk across the following 10 years. Given the broad importance of daily stressors for short- and long-term well-being (Charles et al., 2013), we teased apart the contribution of daily marital discord from that of interpersonal tensions with people other than the spouse, as well as non-interpersonal daily stressors.

Method

Participants

The study sample consisted of participants from the MIDUS project. Details about recruitment, selection criteria, and data collection are described in prior work (Brim et al., 2004). Participants completed phone interviews and self-administered questionnaires in 1995–1996 (Wave 1) and again approximately 10 years later (2004–2006, Wave 2). At Waves 1 and 2, a random subsample also completed the National Study of Daily Experiences, a daily diary study of telephone interviews conducted on 8 consecutive nights (Almeida et al., 2009). Selection criteria for the analytic samples maximized the available data for the primary study aims. All aims used data from those who reported marital risk at Waves 1 and 2, and thus were partnered at both waves. For Aim 2, participants had to complete at least 5 of the 8 nightly assessments at Wave 2 ($N_{participants}$=1175, n_{days} = 9153) (Bolger & Laurenceau, 2013). For Aims 1 and 3, the analytic sample completed at least 5 of 8 nightly assessments at both Waves 1 and 2 ($N_{participants}$= 484, n_{days} = 3846). Most participants—97.4% at Wave 2 and 96.5% at Wave 1—completed at least 6 daily interviews (M_{W2} = 7.6, SD_{W2} = 0.7; M_{W1} = 7.4, SD_{W1} = 0.8).

A large majority of the analytic sample reported being married at both Wave 1 (94.4%) and Wave 2 (96.0%). Most of the married participants were in their first marriage (80.8% at Wave 1; 78.0% at Wave 2). To maximize the sample size, our selection criteria did not

require participants to be married; however, in sensitivity analyses, we examined hypotheses in a subsample who were married at both waves and did not re-marry between waves. For simplicity, we refer to *marital* and *spousal* throughout the manuscript even though a minority of our partnered participants were not legally married.

Long-term measures

Past-month depressed mood. At both waves of the MIDUS Self-Administered Questionnaire, participants reported how much of the time in the past month they felt "so sad nothing could cheer you up," "hopeless," "that everything was an effort," and "worthless" on a scale of 1-*All of the time* to 5-*None of the time* (Kessler et al., 2002; Mroczek & Kolarz, 1998). Reverse-scored items were averaged to create a score for past-month depressed mood at each wave ($\alpha_{W1} = .85$; $\alpha_{W2} = .84$). The choice of this scale reflected our interest in continuous symptom scores over depression diagnosis. In addition, aside from the temporal anchor of *past month* versus *today*, these items directly paralleled the depressed mood scale in the daily diary survey.

Perceived marital risk. Perceived marital risk consisted of two summed items (Booth et al., 1983). The first captured how often participants thought their relationship might be in trouble in the past year (1-*Never* to 5-*All the time*). The second asked participants to rate "realistically, what do you think the chances are that you and your partner will eventually separate?" (1-*Very likely* to 4-*Not likely at all*, reverse-scored). Participants completed the items at Waves 1 ($\alpha = .72$) and 2 ($\alpha = .71$).

Daily measures

Daily depressed mood. Each night in the daily telephone interview at both waves, participants rated how much of the time that day they felt so sad nothing could cheer them up, hopeless, that everything was an effort, and worthless, on a scale of 0-*None of the time* to 4-*All of the time* (Kessler et al., 2002; Mroczek & Kolarz, 1998). The items were averaged to create a depressed mood score for each day. Generalizability coefficients provided estimates for between-person reliability at Wave 1 ($R_{between} = .72$) and Wave 2 ($R_{between} = .73$), as well as within-person reliability at Wave 1 ($R_{within} = .59$) and Wave 2 ($R_{within} = .50$) (Bolger & Laurenceau, 2013).[1]

Daily stressors. In accordance with the Daily Inventory of Stressful Events (Almeida et al., 2002), participants dichotomously reported in each daily interview whether or not they had experienced each of 7 types of stressors in the past 24 hours: an argument or disagreement, avoided argument or interpersonal tension, stressor at work or school, stressor at home, discrimination, network stressor (i.e., event that happened to a close friend or family member), and any other stressor. In prior work, interpersonal tension (i.e., arguments and avoided arguments) more strongly predicted psychological distress than non-interpersonal stressors (Almeida, 2005). Given our interest in marital discord, we further distinguished spousal interpersonal stressors (i.e., arguments and avoided

arguments with the spouse) and other interpersonal stressors (i.e., arguments and avoided arguments with someone other than the spouse) from all other stressors (e.g., stressors at work or home).

Analytic plan

Aim 1: Daily depressive reactivity. To test associations of daily marital discord with daily depressed mood, we first fit multilevel models in SAS 9.4 PROC MIXED using diary data from Waves 1 and 2. Models included random person- and wave-level intercepts to account for the nesting of days within waves, and waves of data within people. Daily depressed mood served as the outcome. Predictors included the within-person associations of daily marital discord, whether a tension or argument had occurred with someone other than the spouse, and whether another type of stressor had occurred. The person means of marital discord, non-spousal tensions, and other stressors were included to tease apart the within- from the between-person variance. Because the variables were dichotomously coded, these reflected the proportion of days on which each type of stressor occurred throughout the 8-day period. The model accounted for the fixed effect of wave, as well as age and gender because depressed mood tends to decline with age, and women have endorsed more depressive symptoms compared to men (e.g., Fiske et al., 2009).

In the second step, we included the random slope of daily marital discord on depressed mood and its covariance with the random intercept to evaluate improvement in model fit. A significant log likelihood ratio test signals that individuals differ in the degree to which daily depressed mood covaries with day-to-day fluctuations in marital discord, and thus that depressive reactivity may explain between-person variation in past-month depressed mood and marital risk.

Aim 2: Change model. To test hypotheses regarding links between daily depressive discord reactivity and past-month depressed mood and marital risk, latent-variable multilevel models were estimated in Mplus 7.4 (See Supplemental Material), following an approach from prior work that linked daily processes to prospective change over years (Wilson et al., 2017). Each of the models had two parts: a daily portion using data from Wave 2 that treated daily depressed mood as the outcome, and a long-term portion that treated Wave 2 past-month depressed mood or marital risk as the outcome. A latent variable constructed in the daily part of the model captured a person's depressive reactivity to daily marital discord. It included random person-level intercepts, a random slope for depressive reactivity, and their covariance.

In the long-term part of the model that treated Wave 2 past-month depressed mood as outcome, we controlled for Wave 1 past-month depressed mood to determine whether daily depressive reactivity explained concurrent past-month depressed mood above and beyond preexisting levels of depressed mood. We covaried Wave 2 marital risk to account for the association of depressed mood and concomitant marital problems. The depressive reactivity latent variable was included to test whether greater elevations in depressed mood with day-to-day marital conflict at Wave 2 served as a unique marker for past-month depressed mood. We also examined whether more frequent daily marital discord

explained between-person variation in past-month depressed mood by including the person mean of daily marital discord. The person means of non-spousal tensions and non-interpersonal stressors were treated as covariates to account for the role of generalized social stress as well as non-social stress. Age and gender served as covariates, and the covariance between daily depressed mood and past-month depressed mood was estimated. The model that treated Wave 2 marital risk as outcome mirrored this structure. Missing data were handled in Mplus with full information maximum likelihood, which makes use of all available data.

Aim 3: Prospective change model. To assess daily depressive reactivity as a predictor of longer-term, prospective change in depressed mood and marital risk, we added Wave 1 diary data to the models constructed for Aim 2. In addition to the daily and person-mean terms for Wave 1, we estimated random intercepts for Wave 1 daily depressed mood, random slopes for Wave 1 depressive reactivity, and their covariances with Wave 2 random intercepts and slopes.

Sensitivity analyses. In a series of sensitivity analyses, we further probed the robustness of the hypothesized associations for Aims 2 and 3. First, we created additional latent variables to capture daily depressive reactivity to non-spousal tensions and to non-interpersonal stress, to rule out the possibility that associations with daily discord reactivity were attributable to generalized reactivity. Second, we included concurrent measures of income, perceived partner responsiveness, and neuroticism to account for their contributions to relationship function and well-being (Brock & Lawrence, 2014; Karney, 2021; Stanton et al., 2019). In this model, we also controlled for the time interval between the assessments of past-month depressed mood and marital risk (i.e., in the Self-Administered Questionnaire) and the diary study: although these measures were collected at the same wave and, therefore, treated as roughly concurrent, the timing of their completion varied across the sample. Treating the two study components as concurrent makes sense insofar as the decade intervals between the Self-Administered Questionnaires capture slower-moving changes, and daily processes sampled at each wave are assumed to represent patterns typical of that time period (e.g., Sin et al., 2015). Finally, we tested associations within a more restrictive sample of married individuals who did not remarry between waves.

Results

Sample description

Half of the analytic sample was female (52.5%). Most participants were White (93.8%); other participants were African American (2.4%), Native American or Alaska Native (1.0%), Asian (0.2%), or of another race (2.5%). By Wave 2, most held a college or associate degree (47.9%); others completed partial college (23.0%), held a high school degree (24.7%), or did not graduate from high school (4.2%). Most identified as heterosexual (98.4%), whereas fewer identified as gay or lesbian (0.5%) or bisexual (0.5%).

Median income was $70,000 at Wave 1 and $67,250 at Wave 2. Most participants had no difficulty with activities of daily living at Waves 1 (91.6%) and 2 (80.6%). At Wave 1, 219 (45.2%) had at least one marital discord day ($N_{observations}$=1740; proportion of marital discord days, $M = 0.10$, $SD = 0.14$). At Wave 2, 532 (45.3%) in the analytic sample had at least 1 day with marital discord ($N_{observations}$=4138; proportion of marital discord days, $M = 0.10$, $SD = 0.14$). On more than half of days with marital discord, no other stressors were reported (61.6% at Wave 1; 73.5% at Wave 2). On approximately one third of marital discord days, one other type of stressor also arose (34.7% at Wave 1; 30.3% at Wave 2). Rarely, marital discord, interpersonal stress with someone other than the spouse, and non-interpersonal stress arose on the same day (3.7% at Wave 1; 1.2% at Wave 2). See Table 1 for zero-order correlations among primary study variables.

Aim 1: Daily depressive reactivity

On average, depressed mood was higher on days when people reported an argument or tension with their spouse, (B = 0.073, SE = 0.007, $p < .0001$, Cohen's $f^2 = 0.01$). Daily non-spousal tension (B = 0.057, SE = 0.006, $p < .0001$, Cohen's $f^2 = 0.01$) and non-interpersonal stressors (B = 0.049, SE = 0.005, $p < .0001$, Cohen's $f^2 = 0.01$) also shared unique associations with that day's depressed mood.

A significant log likelihood ratio test ($X^2(2) = 327.2$, $p < .0001$) further suggested that there was sufficient between-person variability in the degree to which daily marital discord tracked with daily depressive symptoms for depressive reactivity to be tested as a meaningful variable in models of long-term depressed mood and perceived marital risk.

Aim 2: Change model

Past-month depressed mood. As hypothesized, those who experienced larger increases in daily depressed mood on days with daily marital conflict (i.e., had greater depressive reactivity) also had greater concurrent past-month depressed mood, accounting for prior levels of depressed mood (Table 2, $p = .014$, Cohen's $f^2 = 0.09$). The frequency of daily marital discord independently explained significant variance in past-month depressed mood, apart from daily depressive reactivity ($p = .030$, Cohen's $f^2 = 0.01$). The frequency of other stressors (i.e., non-spousal interpersonal stressors and other stressors) were not associated with past-month depressed mood.

In sensitivity analyses, reactivity to other stressors did not significantly explain past-month depressed mood ($ps > .080$), nor did they change the significance of reactivity to marital discord ($p = .023$) or the frequency of daily marital discord ($p = .048$). Adding income, perceived partner responsiveness, neuroticism, and the time interval between projects to the model also did not change findings with daily depressive reactivity to marital discord ($p = .019$) or the frequency of daily marital discord ($p = .025$). Restricting the sample to only married individuals who had not re-married between waves did not change the finding for daily depressive reactivity ($p = .025$), but did minimize the association between more frequent daily marital discord and higher past-month depressed mood to non-significance ($p = .070$).

Table 1. Description of primary study variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	W2 M(SD)	W1 M(SD)
1. Past-month depressed mood	**.43***	.29*	.30*	.41*	.07*	.16*	.02	.04	.01	.02	−.15*	1.31 (0.51)	1.31 (0.49)
2. Marital risk	.22*	**.45***	.14*	.19*	.09*	.20*	.05	.19*	.01	.02	−.23*	3.28 (1.54)	2.95 (1.43)
3. Daily depressed mood (L1)	.32*	.11*	**.27***	.73*	.15*	.20*	.08*	.07*	.02	.02	−.08*	1.10 (0.30)	1.09 (0.29)
4. Daily depressed mood (L2)	.42*	.14*	.76*	**.42***	.13*	.27*	.04	.09*	.01	.02	−.11*	1.10 (0.22)	1.09 (0.22)
5. Daily marital discord (L1)	.05*	.09*	.09*	.05*	**.16***	.46*	−.06*	−.04	−.15*	−.01	−.01	0.09 (0.29)	0.10 (0.29)
6. Daily marital discord (L2)	.12*	.20*	.08*	.10*	.45*	**.45***	−.04	−.08*	−.01	−.04	−.03	0.09 (0.13)	0.09 (0.13)
7. Daily non-spousal tension (L1)	.04*	.06*	.10*	.08*	−.08*	−.02	**.10***	.48*	−.19*	−.003	−.09*	0.14 (0.35)	0.13 (0.33)
8. Daily non-spousal tension (L2)	.08*	.12*	.11*	.15*	−.01	−.03	.49*	**.30***	−.003	−.01	−.17*	0.14 (0.17)	0.12 (0.15)

(continued)

Table 1. (continued)

Variable	1	2	3	4	5	6	7	8	9	10	11	W2 M(SD)	W1 M(SD)
9. Daily non-interpersonal stress (L1)	.01	.02	.07*	.05*	−.15*	−.01	−.17*	−.02	**.04**	.46*	−.05	0.17 (0.38)	0.17 (0.38)
10. Daily non-interpersonal stress (L2)	.03	.04*	.09*	.11*	−.01	−.03	−.02	−.04	.45*	**.37***	−.10*	0.18 (0.17)	0.17 (0.17)
11. Age	−.10*	−.24*	−.03	−.05*	.004	.02	−.16*	−.31*	−.01	−.03	**1.00***	46.70 (12.26)	56.54 (11.73)

Note: Ns = 4952–5234 Wave 1 observations. Ns = 8851- 9153 Wave 2 observations. Wave 1 variables are above the diagonal and Wave 2, below the diagonal. Correlations between Waves 1 and 2 are bolded along the diagonal. Given the large sample size, correlations of small magnitude were statistically significant. W1 = Wave 1; W2 = Wave 2; L1 = Level-1 variable; L2 = Level-2 variable (i.e., person mean); *, $p < .0001$.

Table 2. Latent-variable multilevel model of concurrent depressed mood by daily depressed mood and spousal dynamics.

Wave 2 daily depressed mood	**B**	**SE**	***p***
Age	<0.0001	0.001	.340
Female	0.020	0.012	.106
W2 daily marital discord	0.070	0.012	<.0001
W2 daily non-spousal tension	0.058	0.009	<.0001
W2 daily non-interpersonal stressors	0.053	0.007	<.0001
W2 average daily marital discord	0.055	0.043	.198
W2 average daily non-spousal tension	0.105	0.070	.133
W2 average daily non-interpersonal stressors	0.091	0.046	.048
Wave 2 past-month depressed mood	**B**	**SE**	***p***
W1 depressed mood	0.400	0.044	<.0001
W2 marital risk	0.035	0.011	.002
Age	<0.0001	0.001	.789
Female	0.020	0.025	.408
W2 average daily marital discord	0.235	0.108	.030
W2 average daily non-spousal tension	0.124	0.092	.177
W2 average daily non-interpersonal stressors	−0.027	0.059	.642
W2 daily depressive reactivity to discord	0.606	0.248	.014

Note: Model also included random person-level intercepts of daily depressed mood and its covariance with Wave 2 past-month depressed mood and with the random slopes of daily depressive reactivity to discord (Covariance estimate = 0.011, SE = 0.004, p = .005).

Marital risk. Contrary to prediction, daily depressive reactivity was not associated with concurrent marital risk (Table 3, p = .292). However, those with higher rates of daily marital discord also reported greater perceived marital risk ($p < .0001$, Cohen's $f^2 = 0.02$).

In sensitivity analyses, daily depressive reactivity to non-spousal stressors and non-interpersonal stressors did not significantly explain concurrent marital risk (ps > .629), nor did they change the significant association between more frequent daily marital discord and higher marital risk ($p < .0001$). Adding income, perceived partner responsiveness, neuroticism, and the assessment interval to the model also did not change findings with daily marital discord frequency ($p < .0001$). Likewise, restricting the sample to married individuals did not change the association ($p < .0001$).

Aim 3: Prospective change model

Past-month depressed mood. As hypothesized, those with greater depressive reactivity to discord at Wave 1 also had larger increases in past-month depressed mood 10 years later (Table 4, p = .027, Cohen's $f^2 = 0.14$). However, the frequency of daily marital discord,

Table 3. Latent-variable Multilevel Model of Concurrent Perceived Marital Risk by Concurrent Daily Depressed Mood and Spousal Dynamics.

Wave 2 daily depressed mood	**B**	**SE**	***p***
Age	<0.0001	0.001	.333
Female	0.020	0.012	.106
W2 daily marital discord	0.071	0.012	<.0001
W2 daily non-spousal tension	0.058	0.009	<.0001
W2 daily non-interpersonal stressors	0.054	0.007	<.0001
W2 average daily marital discord	0.055	0.043	.196
W2 average daily non-spousal tension	0.105	0.070	.133
W2 average daily non-interpersonal stressors	0.091	0.046	.048
Wave 2 marital risk	**B**	**SE**	***p***
W1 marital risk	0.345	0.033	<.0001
W2 depressed mood	0.299	0.098	.002
Age	−0.015	0.003	<.0001
Female	0.073	0.071	.307
W2 average daily marital discord	1.566	0.311	<.0001
W2 average daily non-spousal tension	0.136	0.262	.604
W2 average daily non-interpersonal stressors	0.195	0.187	.299
W2 daily depressive reactivity to discord	0.328	0.003	.292

Note: Model also included random person-level intercepts of daily depressed mood and its covariance with Wave 2 marital risk and with the random slopes of daily depressive reactivity to discord (Covariance estimate = 0.011, SE = 0.004, p = .006).

non-spousal tensions, and non-interpersonal stressors did not significantly predict subsequent past-month depressed mood (ps > .305).

In sensitivity analyses, daily depressive reactivity to non-spousal stressors and non-interpersonal stressors at Wave 1 did not significantly explain Wave 2 past-month depressed mood (ps > .113), nor did they change the significance of daily depressive reactivity to marital discord (p = .008). Adding income, perceived partner responsiveness, neuroticism, and the assessment interval to the model also did not change findings with daily depressive reactivity to marital discord (p = .028). Restricting the sample to only continuously married individuals did not change the finding for daily depressive reactivity to marital discord (p = .046).

Marital risk. Contrary to prediction, Wave 1 daily reactivity did not predict prospective changes in marital risk over the 10-year period (Supplemental Table S1, p = .427), nor did the frequency of daily marital discord, non-spousal tensions, or non-interpersonal stressors (ps > .094). These patterns did not change in sensitivity analyses.

Table 4. Latent-variable Prospective Model of Depressed Mood, Daily Depressed Mood, and Spousal Dynamics.

Wave 1 daily depressed mood	**B**	**SE**	***p***
Age	−0.001	0.001	.275
Female	0.045	0.017	.010
W1 daily marital discord	0.075	0.019	<.0001
W1 daily non-spousal tension	0.047	0.014	.001
W1 daily non-interpersonal stressors	0.039	0.011	<.0001
W1 average daily marital discord	0.342	0.104	.001
W1 average daily non-spousal tension	0.044	0.060	.459
W1 average daily non-interpersonal stressors	−0.011	0.039	.785
Wave 2 daily depressed mood	**B**	**SE**	***p***
Age	0.001	0.001	.223
Female	0.013	0.019	.492
W2 daily marital discord	0.064	0.023	.006
W2 daily non-spousal tension	0.045	0.012	<.0001
W2 daily non-interpersonal stressors	0.058	0.010	<.0001
W2 average daily marital discord	0.052	0.064	.414
W2 average daily non-spousal tension	0.196	0.101	.051
W2 average daily non-interpersonal stressors	0.031	0.050	.530
Wave 2 past-month depressed mood	**B**	**SE**	***p***
W1 depressed mood	0.244	0.055	<.0001
W1 marital risk	0.028	0.016	.083
Age	−0.001	0.002	.726
Female	−0.012	0.037	.748
W2 average daily marital discord	0.427	0.185	.021
W2 average daily non-spousal tension	0.136	0.140	.332
W2 average daily non-interpersonal stressors	−0.025	0.097	.795
W2 daily depressive reactivity to discord	2.060	1.091	.059
W1 average daily marital discord	0.013	0.156	.936
W1 average daily non-spousal tension	0.152	0.148	.305
W1 average daily non-interpersonal stressors	−0.042	0.101	.676
W1 daily depressive reactivity to discord	2.547	1.152	.027

Note: Model also included random person-level intercepts of daily depressed mood at Waves 1 and 2, as well as the covariance of these random intercepts with random slopes of daily depressive discord reactivity at Waves 1 and 2 (Covariance of W1 random reactivity slopes and intercepts = 0.010, SE = 0.004, p = .015; Covariance of W2 random reactivity slopes and intercepts = 0.012, SE = 0.005, p = .013; Covariance of W1 and W2 random intercepts = 0.016, SE = 0.005, p = .004; Covariance of W1 and W2 random reactivity slopes = −0.047, SE = 0.027, p = .077).

Discussion

In a national study of adults in the U.S., on average, depressed mood rose on days when individuals had an argument or tension with their spouse. Thus, the well-established links between marital discord and depressed mood also emerged in daily life. Furthermore, participants varied in the degree to which marital discord related to depressive mood responses (i.e., daily depressive reactivity to discord). Individuals' depressive reactivity to discord explained significant between-person variance in past-month depressed mood, beyond prior levels of depressed mood, marital risk, the frequency of other daily stressors, and even reactivity to other stressors. In parallel, more frequent marital discord in daily life was also linked to greater concurrent past-month depressed mood and marital risk. These findings provide initial evidence that daily dynamics are linked to more established patterns of how people feel and how they perceive their relationships.

Guided by Repetti et al.'s (2011) gear metaphor, we further explored the potential for daily depressive reactivity to predict prospective change in past-month depressed mood and marital risk across 10 years. The gear metaphor posits that two smaller gears—representing daily events and short-term responses to those events—rotate at a quicker pace and, in turn, shift larger, slower-moving gears that represent more gradual change. Findings from our prospective change model support this idea: those who exhibited larger daily depressive reactivity to marital discord at Wave 1 showed greater escalation of past-month depressed mood over the subsequent 10 years. As the first study to examine daily marital patterns along with decade-long trends in depressed mood and marital outcomes, this investigation uncovered how short-term mood and marital dynamics explain patterns in long-term marital processes and depressed mood, both concurrently and over time.

Associations between marital discord and depressed mood in daily life

The current study is the first to link marital arguments and tensions in daily life with higher daily depressed mood. Indeed, prior work has focused on continuous ratings of daily relationship satisfaction rather than the occurrence of discrete, negative marital events. Within the framework of the Marital Discord Model of Depression (Beach et al., 1990), researchers have postulated that bouts of marital conflict and tension may play a central role in the onset and maintenance of depressive symptoms, in part by repeatedly triggering depressed mood in response to conflictual marital interactions. Whisman et al. (2002) demonstrated that marital conflict disrupts mood in the laboratory setting; our study extends this work by showing that depressed mood also rises with naturally occurring marital arguments and tension in daily life.

In addition, these daily links emerged in a large, national sample of middle-aged and older adults. Other daily diary studies have drawn from small samples—ranging from 31 individuals to 63 couples—that targeted specific subgroups of primarily young adults, i.e., young-adult wives who were newlyweds or in a clinically distressed marriage (Smith et al., 2012), and young college couples (Auger et al., 2017). According to Socioemotional Selectivity Theory and the Strength and Vulnerability Integration model,

relationship satisfaction and well-being may improve with age, as people increasingly prioritize their most important relationships and maximize emotional well-being in part by employing strategies that minimize social conflict (Carstensen, 1995; Charles, 2010). In light of age-related positivity biases, the emergence of daily marital discord as a meaningful predictor of daily depressed mood and long-term outcomes is especially notable in our older sample. On the other hand, despite a moderate correlation between older age and less frequent interpersonal tensions with people *other* than the spouse, there was no association between age and daily marital discord, suggesting that positivity bias may not offset negative *marital* interactions.

In relation to prior research on daily stress, this study is one of the few to separate the contribution of marital discord from arguments and tension with other people, and from non-interpersonal stressors. The fact that daily discord with the spouse shared a measurable association with daily depressed mood apart from the association of daily strain with others is important given the consistent finding that interpersonal stressors collectively share particularly robust links to daily and long-term well-being (Charles et al., 2013; O'Neill et al., 2004). Indeed, in our study, the experience of depressed mood in daily life was not solely a function of generalized social strain, but rather was explained by the additive roles of the marital relationship, the surrounding social network, and non-interpersonal work- and home-related hassles.

Linking short-term marital discord and depressed mood to long-term outcomes

To our knowledge, the current study is the first to link short-term marital dynamics to long-term depressed mood and marital outcomes, bridging a critical gap in studies designed to test and inform the Marital Discord Model of Depression. Given the well-established cognitive biases associated with depression (Marchetti et al., 2018), experiencing depressed mood in everyday life can directly influence a person's interpretation of their partner's emotional expressions and actions, as well as their memory for such exchanges, in a way that magnifies the impact of negative events like marital arguments. In turn, this may prolong depressed mood and thoughts, which can exacerbate marital problems and encourage more fatalistic thinking about the relationship (Beach & O'Leary, 1993).

Daily depressive reactivity to marital discord marks between-person variation in past-month depressed mood. Those who experienced greater transient increases in depressed mood on days with marital discord also reported higher past-month depressed mood. Our finding underscores the unique importance of discord-related daily depressive reactivity for understanding past-month depressed mood—beyond chronic, preexisting depressed mood. Indeed, this analysis revealed depressive reactivity as a novel, everyday hallmark of depressed mood in partnered individuals. Moreover, this association was specific to marital discord reactivity, not explained by generalized reactivity to any stressor, which highlights the unique explanatory value of mood responses to daily *marital* experiences. The association was also robust to the contributions of perceived partner responsiveness, neuroticism, and income, all of which can influence depression. This association with

Wave 2 marital discord reactivity was attenuated when Wave 1 marital discord reactivity was added in Aim 3, unsurprising given the smaller sample used for Aim 3 and the attrition of more depressed, maritally distressed individuals from Waves 1 to 2.

Frequency of daily marital discord linked to concurrent past-month depressed mood and marital risk. More frequent daily marital discord was linked to higher concurrent depressed mood and marital risk, apart from the contributions of daily depressive reactivity. According to the Marital Discord Model of Depression, many processes involved in marital discord may be related to long-term depression and marital dysfunction. For example, recurring patterns of conflict may detract from quality time and disrupt routines (e.g., withholding typical responses in conversation or avoiding usual physical contact), both of which reduce couple cohesion. Frequent conflict may also hamper exchange of emotional disclosure, which would interfere with felt intimacy (Laurenceau et al., 2005). In turn, these noxious patterns could erode perceived marital support, feelings of spousal dependability, security, and intimacy in the relationship, which may partially underlie the experience of depressive symptoms and marital risk.

Associations of more frequent daily marital discord with increased past-month depressed mood and marital risk were especially compelling in light of having controlled for interpersonal and non-interpersonal daily hassles that were external to the relationship. Given the importance of interpersonal daily hassles for long-term depression and their significance for daily depressed mood in our study, it was striking to find that only daily marital discord and associated depressive reactivity were significantly related to long-term outcomes. This suggests that daily processes specific to the marital relationship account for long-term patterns of marital risk and depressed mood, beyond generalized personality- or stress-related phenomena that would affect a person's experience of other daily hassles and challenges in other relationships (cf. Beach & O'Leary, 1993). These findings also run counter to prior work that showed the quality of intimate partner relationships was less important for health and well-being than that of other familial relationships (Priest et al., 2015; Woods et al., 2020). Indeed, given the intertwinement of partners' daily routines, marital discord may be even more likely than non-spousal conflict or non-interpersonal stressors to spill over to other aspects of life and to everyday depressed mood.

Daily depressive reactivity to marital discord prospectively predicts 10-year change in depressed mood. Using a multiple timescale design, our investigation uncovered depressive reactivity to marital discord in daily life as a *prospective* predictor of 10-year changes in depressed mood. With a medium effect size, this pattern arose in spite of the attrition from the first to second waves and the smaller number of observations at the first diary wave compared to the second. Moreover, the association was robust to other forms of daily stressor reactivity at Wave 1, partner responsiveness, personality, socioeconomic status, assessment timing, and marital status.

The present finding supports and extends researchers' speculations from prior work. For instance, based on their finding that marital conflict in the laboratory triggered acute depressive responses, Whisman et al. (2002) suspected that repeated conflict-related

depressive responses would exacerbate or maintain depression in the long-term. However, the laboratory-based study design left questions about whether the role of the interviewer shaped the results, and thus, whether similar patterns would arise spontaneously in couples' daily lives. Indeed, if lab-based interactions do not emerge in daily life, the observed dynamics are unlikely to drive long-term changes in depression. According to our results, not only does depressed mood rise with marital discord in daily life, but the magnitude of depressive reactivity to marital discord is also correlated with subsequent, long-term increases in depressed mood.

In parallel, Beach and O'Leary (1993) postulated that people who are especially reactive to stress would be more likely to experience heightened depression and marital instability due to even minor relationship issues, including arguments with the spouse. In their longitudinal study of newlyweds before marriage and 6- and 18-months post-nuptials, the authors found that such "chronically dysphoric" individuals—those who consistently experienced high negative affect and low positive affect, and thus were expected to be more stress-reactive—did exhibit larger increases in depression along with marital quality declines over 18 months. Our results linking daily depressive reactivity to subsequent 10-year changes in depressed mood reveal novel evidence of a parallel pattern that manifests in daily life. Indeed, this person-specific depressive reactivity slope captures differences in individuals' proneness to daily depressed mood and their vulnerability to everyday marital challenges. Consistent with this idea, those who experienced greater depressive reactivity to daily marital discord also had higher daily depressed mood, on average, reflected in the significant, positive covariance between daily depressive reactivity and daily depressed mood. Despite this, and in spite of the fact that daily depressed mood was also correlated with 10-year changes in past-month depressed mood, daily depressive reactivity *independently* predicted increased past-month depressed mood.

Limitations and future directions

A strength of the current study is its use of a large, national sample. However, White, educated, married, heterosexual individuals were overrepresented in the sample; information on participants' gender identity was not provided. Levels of depressed mood at both timescales were also quite low, obscuring implications of daily marital processes in the context of syndromal depression. Future research must replicate this work in clinical samples. Also, the MIDUS project's primary purpose was to characterize trajectories of individual adult development, rather than the evolution of relationships, which means the available data could not confirm that participants remained in the same relationship across waves. To maximize the chances that participants were reporting on experiences with the same partner over time, we selected a sample of participants who reported on marital risk at both waves. To further mitigate this issue, we conducted a sensitivity analysis that only examined married individuals who had not re-married between the two waves. Results were robust to these variations in sample composition, as well as to other forms of daily stressor reactivity, perceived partner responsiveness, personality, socioeconomic status, and assessment timing. Follow-up studies can fruitfully extend this work by capturing a

broader array of daily marital processes thought to play a role in discord-depression dynamics—e.g., reports of support, disclosure, and cohesion from both partners—to explore whether they contribute independently to the maintenance and exacerbation of depressed mood, as well as marital outcomes. Although we conceptualized the daily link between marital processes and mood as depressive reactivity to marital discord, consistent with other stressor reactivity studies published using MIDUS data (Almeida, 2005), both constructs were measured at the same time each night and, thus, directionality cannot be established. Assessments collected within-day are required to tease apart temporal precedence. Similarly, we focused on the prospective associations between daily reactivity and subsequent past-month depressed mood and marital risk; nevertheless, chronically depressed mood may also amplify individuals' later reactivity to daily marital discord since depression colors perceptions of marital processes. Indeed, the association between long-term depressed mood and short-term reactivity is likely bidirectional, and our findings suggest that intervening at the daily level may be a fruitful point of entry into this cyclical process.

Conclusions

The current study identified two key marital patterns, depressive reactivity to daily discord and the frequency of marital discord in daily life, as novel factors that are relevant for past-month depressed mood and marital risk. As the first study to link daily marital dynamics to 10-year, prospective changes in past-month depressed mood, these results uncover new insights about how patterns of marital interaction and depressive responses in daily life underlie long-term trends in depression. Grounded in a multitemporal perspective, findings support the previously untested idea that everyday marital discord and reactivity to such discord may index, and perhaps mobilize, slower-moving shifts in depression across an entire decade.

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Open research statement

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Supplemental material

Supplemental material for this article is available online.

Note

1. According to Nezlek (2017), traditional Cronbach's α benchmarks are not directly applicable to within-person reliability estimates given the comparatively fewer items used in successful EMA and because current multilevel modeling algorithms reduce the weight of low-reliability observations on significance tests.

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