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Transactional Associations Between Couple Relationship Intimacy and Depressive Symptoms Across 10 Years

Objective: *This study tested a transactional model of associations between couple relationship intimacy and one's own and one's partner's depressive symptoms across 10 years.*

Background: *Depressive symptoms and couple relationship intimacy are important aspects of individual functioning and family well-being. Partners' mental health and experiences in couple relationships may be interdependent.*

Method: *Six waves of data from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development were used. At each wave, 654 couples (654 men and 654 women all married and/or living together) reported their relationship intimacy and depressive symptoms. An actor-partner interdependence random intercept cross-lagged panel model was estimated to examine reciprocal relations between men's and women's depressive symptoms and couple relationship intimacy.*

Results: *The cross-lagged paths showed that higher than personal average couple relationship intimacy perceived by men and women predicted intraindividual increases in their partner's perceptions of couple relationship*

intimacy at the next time point. Moreover, for women, higher than personal average relationship intimacy predicted subsequent intraindividual decreases in their depressive symptoms (while the reverse was not true), whereas for men, lower than average depressive symptoms predicted intraindividual increases in self-perceived relationship intimacy (while the reverse was not significant).

Conclusion: *We found reverse temporal precedence of depressive symptoms and couple relationship intimacy for men and women. Partners' relationship intimacy was interdependent.*

Globally, depression has been one of the leading causes of estimated years of life lost due to disability or burdensome diseases during the past decade (World Health Organization, 2018). Major depressive disorder is the most prevalent lifetime disorder in the United States, with a particularly high prevalence for individuals aged 30 to 44 (19.8%) and 45 to 59 (18.8%; Kessler et al., 2005). Numerous efforts have been made to understand the predictors and sequelae of depressive symptoms (e.g., Feng, Shaw, Skuban, & Lane, 2007; Jacobson & Newman, 2017). Among individuals in close relationships, poor marital or couple relationship quality has been identified as one of the important antecedents of depressive symptoms and at the same time an outcome of depressive symptoms (Roberson, Lenger, Norona, & Olmstead, 2018; Whisman & Uebelacker, 2009).

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COUPLE RELATIONSHIP INTIMACY

Intimacy is an essential indicator of high-quality couple relationships (Laurenceau, Barrett, & Pietromonaco, 1998). Lack of intimacy is a major reason for couples to seek professional help (Doss, Simpson, & Christensen, 2004). The interpersonal process model proposes that intimacy is the feeling of closeness that is cultivated from communication processes (Reis & Shaver, 1988). Such processes repeatedly and reciprocally involve a few key components: One individual discloses their personal information, thoughts, and feelings to their partner, verbally and nonverbally; they then receive their partner's responses, which may take the form of emotion expressions or self-disclosure in return; lastly, the individual must construe the received responses and evaluate whether they feel understood, validated, and concerned about (Reis & Shaver, 1988). Disclosure is not only important in relationship formation but also in the maintenance of intimacy and therefore the preservation of high-quality couple relationships.

THEORETICAL PERSPECTIVES

The process of forming and maintaining intimacy involves disclosure, emotion expression, responses to the partner's disclosure, and cognitive appraisal of the partner's behaviors. Depressed individuals may engage in disclosure in ways that disrupt intimacy and relationship maintenance. With a series of experiments, Forgas (2011) found that individuals in sad moods disclose less intimately than neutral or happy people, suggesting a difficulty to establish and maintain intimacy for depressed individuals experiencing chronically sad moods. Moreover, due to a variety of information-processing biases, depressed individuals may be more likely to interpret vague emotional cues through a negative lens and to develop strong negative expectations of the self and others, which can promote withdrawal from others and divestment from close relationships (see Beck & Brede-meier, 2016), therefore disrupting the intimacy formation and maintenance processes. Indeed, Chester and Blandon (2016) found that mothers' depressive symptoms were negatively associated with their marital intimacy. In addition, couple relationship intimacy was identified as a mediator of the association between depressive symptoms and couple relationship satisfaction

in a clinical sample (Finkbeiner, Epstein, & Falconier, 2013). At the same time, a lack of intimacy in couple relationships may lead to higher levels of depressive symptoms (Marroquín & Nolen-Hoeksema, 2015). Low couple intimacy may precede depressive symptoms due to its link with limited social resources and greater vulnerability to stress. High intimacy may be associated with decreased depressive symptoms through establishing the basis for interpersonal emotion regulation and social emotion regulation, where partners could help each other navigate negative life events and cope with negative emotions (Marroquín & Nolen-Hoeksema, 2015).

Together, three prominent interpersonal theories of depression support a transactional model of links between couple relationship quality and depressive symptoms (for a review, see Rehman, Gollan, & Mortimer, 2008). Coyne's (1999) interactional theory of depression and Beach, Sandeen, and O'Leary's (1990) marital discord model suggest that depressive symptoms lead to declines in couple relationship quality via several pathways, including the inadequacy of perceived partner support, lack of coping or cohesion, or absence of intimacy. In addition, low couple relationship quality may precipitate higher depressive symptoms in both partners through hostility, fears of splitting up, disturbance of day-to-day routines, and other chronic stressors (Beach et al., 1990; Hammen, 2006). To advance a more thorough understanding of reciprocal relations between couple relationship quality and individual depressive symptoms, multiwave data in large longitudinal investigations, together with improvements in statistical methodologies (Rehman et al., 2008), such as those utilized in the current study, are critical.

LITERATURE REVIEW

A large body of research has documented associations between couple relationship quality and depressive symptoms (e.g., Figueiredo et al., 2018; Gangamma, Bartle-Haring, Holowacz, Hartwell, & Glebova, 2015; MacKenzie et al., 2014). However, the directionality of such associations is debated. Whereas some studies suggested that depressive symptoms led to declines in couple relationship quality (Gangamma et al., 2015; Knobloch & Knobloch-Fedders, 2010; MacKenzie et al., 2014; Roberson et al., 2018),

others indicated that improved relationship quality alleviated depressive symptoms (e.g., Du Rocher Schudlich, Papp, & Cummings, 2011; Figueiredo et al., 2018; Kouros, Papp, & Cummings, 2008).

In a 21-year longitudinal study, Najman et al. (2014) observed transactional associations between poor marital relationship quality and elevated depressive symptoms among women. In a population representative sample of couples aged 50 or older, Whisman and Uebelacker (2009) found that baseline husband and wife depressive symptoms and marital discord were predictive of later depressive symptoms and marital discord reported by oneself and one's partner. Understanding the temporal precedence of both partners' depressive symptoms and couple relationship quality is vital because it may help reveal the processes underlying complex family dynamics and direct practitioner efforts to improve individual and family functioning.

Building on the current knowledge on couple relationship quality and depressive symptoms, the current study expands the extant literature by focusing on a novel yet essential indicator of couple relationship quality—intimacy—and simultaneously examining bidirectional associations between each partner's perceptions of couple relationship intimacy and depressive symptoms in a sample of coparents. In particular, we used multiwave longitudinal couple data across 10 years to test a comprehensive transactional model of these two constructs to reveal the direction of the associations between couple relationship intimacy and not only one's own but also one's partner's depressive symptoms. Because most prior studies did not distinguish between- and within-individual sources of variance in these associations, which may be one of the explanations for the conflicting findings regarding directionality, the true associations remain unclear. The advanced analytic techniques used in this study allowed us to isolate the within-individual associations between couple relationship intimacy and depressive symptoms, reflecting relations between fluctuations in intimacy and depressive symptoms within individual persons and couples over time, which are arguably of greater practical and theoretical interest than the more typically studied associations (a mixture of between-individual and within-individual associations).

GENDER DIFFERENCES

In different-sex couples, gender may matter in relations between couple relationship intimacy and depressive symptoms. Depressive symptoms are generally more prevalent and severe among women when compared with men (Culbertson, 1997). Experiences in couple relationships and assessments of couple relationship quality can also differ by gender (Doss, Rhoades, Stanley, & Markman, 2009). Moreover, gender plays an important role when examining the strength and directionality of the association between individual depressive symptoms and couple relationship quality (Fincham, Beach, Harold, & Osborne, 1997; Roberson et al., 2018). For example, Fincham et al. (1997) found that although depressive symptoms preceded marital satisfaction for men, the reverse was true for women. Such findings highlight the importance of examining potential gender differences when investigating the associations between couple relationship intimacy and individual depressive symptoms.

THE PRESENT STUDY

The current study focused on the depressive symptoms and couple relationship intimacy of couples in established long-term relationships. We used a sample of couples who participated in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD; <https://seccyd.weebly.com>) and therefore were also parents of at least one child. Although many studies in the larger literature on couple relationship quality and depressive symptoms have focused on particular points in the life course (e.g., transition to parenthood or later life), depressive symptoms are prevalent between the ages of 30 and 59 (Kessler et al., 2005), a period of the life course in which the vast majority of U.S. adults are parenting children (e.g., 69%–86% of women are mothers; U.S. Census Bureau, 2016). In the current study, we used six waves of longitudinal data from the NICHD-SECCYD to test the transactional, actor-partner, and within- versus between-individual associations linking depressive symptoms and couple relationship intimacy of both partners 10 years.

To examine the reciprocal associations between depressive symptoms and couple relationship intimacy of men and women over

time, a random intercept cross-lagged panel model (RI-CLPM; Hamaker, Kuiper, & Grasman, 2015) was used in the current study. In fact, one of the key advantages of the current study lies in this particular analytical method, which partitions variance into between- and within-individual components to allow for the explicit examination of within-individual links between depressive symptoms and couple relationship intimacy (Berry & Willoughby, 2017). In addition to asking, for example, whether couples who are generally more intimate than others typically experience lower depressive symptoms (i.e., between-individual links between intimacy and depressive symptoms), the current study also answers the question of greater practical and theoretical interest: If a given couple experiences higher intimacy than what is typical for them, will their depressive symptoms become lower than normal for them (i.e., within-individual links between intimacy and depressive symptoms)?

The following hypotheses were proposed with respect to the within-individual links to address the direction of associations between couple relationship intimacy and depressive symptoms:

Hypothesis 1: Greater levels of depressive symptoms at earlier time points will predict one's own greater (than personal average) levels of depressive symptoms at the next time point. A similar pattern was expected for couple relationship intimacy (autoregressive paths).

Hypothesis 2: Higher levels of depressive symptoms at earlier time points will predict declines in intraindividual self-perceived couple relationship intimacy subsequently and vice versa (actor effect between construct cross-lagged paths).

Hypothesis 3: Each partner's higher depressive symptoms and perception of couple relationship intimacy at earlier time points will predict their partner's higher (than personal average) levels of depressive symptoms and couple relationship intimacy at the next point, respectively (partner within construct cross-lagged paths).

Hypothesis 4: Greater couple relationship intimacy perceived by one individual (when compared with their personal average) will predict fewer subsequent depressive symptoms of their partner (when compared with the partner's personal average); similarly, higher

levels of intraindividual depressive symptoms will predict lower couple relationship intimacy rated by their partner (partner between construct cross-lagged paths).

The hypotheses for between-individual associations were analogous to the within-individual associations. We expected individuals with elevated depressive symptoms to have lower relationship intimacy and vice versa. We also anticipated that partners of individuals with elevated depressive symptoms would experience lower relationship intimacy and that partners of individuals with greater relationship intimacy would have lower levels of depressive symptoms.

METHOD

Sample

Data were drawn from NICHD-SECCYD. Participating families ($N = 1,364$) were recruited at 10 sites across the United States. They were followed from 1 month after the birth of the target child in 1991 to their child's 15th year. The NICHD Early Child Care Research Network (2004) provided details on recruitment and sampling procedures. The current study used data primarily from six time points (target child at 54 months, Grades 1, 3, 5, 6, and age 15; 1994–2006). In addition, we included demographic information reported by mothers at 1 month postpartum as covariates. To be included in the restricted sample, all participants had to indicate residence status and relationship with the target child for at least one time point, and never indicated nonresidence status or relationships other than biological parents. Including only biological parents ensured that there was no change of partners in the sample. This was achieved with a two-step approach. We first excluded 595 families where at least one individual who was not the target child's biological parents responded to the intimacy and depressive symptoms measures at any time point. We then excluded 115 families with nonresident fathers or mothers. The exclusion criteria resulted in a subsample of 654 pairs of coresident biological fathers and mothers.

Most women identified as White (90.7%; $n = 593$), with the remainder identifying as Black (5.20%; $n = 34$); Asian and Pacific Islander (1.07%; $n = 7$); American Indian, Eskimo, Aleutian (0.46%; $n = 3$); or other

(2.60%; $n = 17$). Most men were White (90.98%; $n = 595$), with the remainder identified as Black (5.05%; $n = 33$); Asian and Pacific Islander (1.53%; $n = 10$); American Indian, Eskimo, Aleutian (0.15%; $n = 1$); or other (2.14%; $n = 14$). Women's age at the target child's birth ranged from 18 to 46 ($M = 30.04$; $SD = 4.98$). Women completed 7 to 21 years of education ($M = 15.09$, $SD = 2.33$). Men completed 7 to 21 years of education ($M = 15.28$, $SD = 2.65$). Most women (96.63%; $n = 632$) and men (96.17%; $n = 629$) graduated from high school, with 51.83% of women ($n = 339$) and 52.59% of men ($n = 344$) having received a bachelor's degree or higher. At the first time point (target child at 54 months), 606 (92.66%) pairs of couples were married, and the mean household income-to-needs ratio was 4.30 ($SD = 3.46$). Approximately 57% of families reported household income scores above 3 on the income-to-needs ratio (indicating middle class), whereas 16.06% and 2.58% of families scored below 2 (indicating low income) and 1 (indicating poverty), respectively (Dearing, McCartney, & Taylor, 2001). When the target child was at 54 months, Grades 1, 3, 5, 6, and age 15, the percentages of women who were identified as at risk for clinical depression (scoring 16 or higher on the Center for Epidemiological Studies Depression Scale; see the Measures section) were 14.88%, 11.26%, 14.69%, 13.67%, 15.18%, and 18.00%, respectively. The percentages for men were 8.75%, 9.01%, 12.70%, 11.36%, 11.64%, and 13.71%, respectively.

Procedure

At 1 month after childbirth, women reported basic demographic characteristics of their families, including women's age, women's and men's race, and women's and men's years of education. At 54 months, women reported on their marital status and family income. Based on the sizes and locations of the families, the study investigators computed and provided an income-to-needs ratio for each family. When the target child was at 54 months, Grades 1, 3, 5, 6, and age 15, women and men rated their couple relationship intimacy and depressive symptoms.

Measures

Depressive Symptoms. The participants reported their depressive symptomatology on the 20-item

Center for Epidemiological Studies Depression Scale (Radloff, 1977), a widely used self-report measure of depressive symptoms in the general population. The participants responded on a 1 to 4 point Likert scale (1 = *less than once a week* to 4 = *5–7 days a week*) to rate the frequency that they had experienced depressive and sad feelings during the past week (e.g., "I felt that I could not shake off the blues even with the help of my family/friends"). Across the six time points, the internal consistencies ranged between .89 and .91 among the women and between .83 and .90 among the men in this sample.

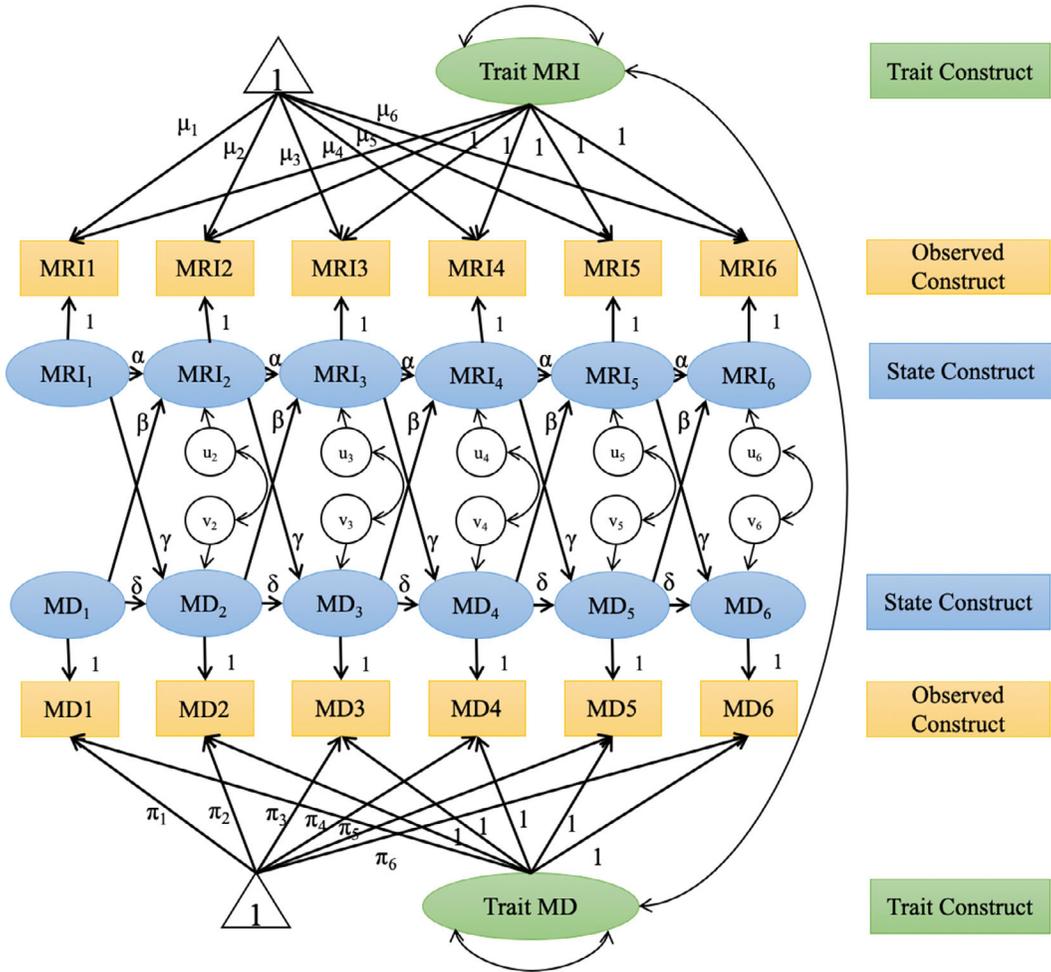
Couple Relationship Intimacy. The participants reported the intimacy in their couple relationship using the six-item emotional intimacy subscale from the Personal Assessment of Intimacy in Relationships (Schaefer & Olson, 1981) on a five-point Likert scale, with 1 = *strongly disagree* and 5 = *strongly agree*. The participants were instructed to think about the relationship with their spouse or partner and rate to what extent they agreed with the six statements (i.e., "My spouse/partner can really understand my hurts and joys," "I often feel distant from my spouse/partner," "My spouse/partner listens to me when I need someone to talk to," "I sometimes feel lonely when we're together," "I can state my feelings without him/her getting defensive," "I feel neglected at times by my spouse/partner"). The scale showed good internal consistency among men and women in this sample (α s ranged .84 to .90 for women and .82 to .88 for men).

Analytic Plan

A RI-CLPM was conducted for two dyadic variables using structural equation modeling. Autoregressive cross-lagged models can examine the stability and temporal ordering of related constructs. RI-CLPM improves over traditional CLPM in that it appropriately accounts for the "trait-like, time-invariant" between-individual differences in the constructs of interest (Hamaker et al., 2015). Therefore, RI-CLPM may provide more accurate parameter estimates for the within-individual associations between couple relationship intimacy and depressive symptoms.

Due to model complexity, it was difficult to demonstrate the visual presentation of the full model. Instead, we provided an illustration of

FIGURE 1. VISUALIZATION OF THE RANDOM INTERCEPT CROSS-LAGGED PANEL MODEL DEPICTING THE RELATIONS BETWEEN TWO OF THE FOUR STUDIED VARIABLES—MEN’S RELATIONSHIP INTIMACY AND MEN’S DEPRESSIVE SYMPTOMS—OVER SIX TIME POINTS.



Note: Specific time points are indicated by numbers after MRI and MD: 1 = Time 1, 2 = Time 2, 3 = Time 3, 4 = Time 4, 5 = Time 5, 6 = Time 6. MRI = men’s relationship intimacy, MD = men’s depressive symptoms. α and δ are autoregressive parameters for men’s relationship intimacy and men’s depressive symptoms that represent the carry-over effects of within-individual variations; β and γ are the cross-lagged parameters for the transactional associations between men’s relationship intimacy and depressive symptoms; u and v denote the residuals; μ and π denote the temporal group means.

the RI-CLPM using two of the four constructs of interest (men’s relationship intimacy and men’s depressive symptoms) in Figure 1. The core part of the full model is shown in Figure S1 in the Supporting Information. Women’s depressive symptoms and women’s relationship intimacy were examined in the same model, but they were omitted in the figure. Specifically, two sources of impact determined the observed constructs

of interest (i.e., depressive symptoms, couple relationship intimacy): state constructs (i.e., latent variables men’s relationship intimacy from Time 1 to 6 [MRI₁₋₆] and men’s depressive symptoms from Time 1 to 6 [MD₁₋₆] in Figure 1) and trait constructs (i.e., latent variables trait MRI and trait MD in Figure 1). The trait constructs describe the extent to which a person is generally depressed or generally feels

intimate in their relationship with their partner (i.e., personal average). The state constructs refer to how much the person fluctuates away from the personal average at a certain point. The trait constructs were allowed to correlate with one another, and the state constructs at the same time point were also allowed to correlate. Demographic characteristics, including age, socioeconomic status, and marital status, have been shown to be associated with both couple relationship intimacy and depressive symptoms of men and women (e.g., Kamp Dush, Cohan, & Amato, 2003; Lorant et al., 2003). Therefore, these factors were included as covariates to control for the potential confounders of the between-individual associations of couple relationship intimacy and depressive symptoms. Including covariates does not change the results of within-individual associations between couple relationship intimacy and depressive symptoms. Cross-lagged paths (i.e., β and γ in Figure 1) between state constructs were included to examine the reciprocal relations among the constructs of interest, whereas autoregressive paths (i.e., α and δ in Figure 1) were controlled for methodological reasons.

Notably, because we had many waves of data and did not have reasons to expect the autoregressive and cross-lagged paths for any constructs to vary across time points, the coefficients for each autoregressive and cross-lagged path from one time point ($T = t$) to the next time point ($T = t + 1$) were constrained to be equal at each wave ($t = 1, 2, 3, 4,$ and 5). For instance, the association between men's relationship intimacy and men's depressive symptoms at the next time point was considered to be equal across all time points (labeled as α in Figure 1). This method increased model parsimony and parameter estimation precision, thereby allowing greater confidence in the model results.

As a preliminary step, we examined what proportion of variance of the constructs of interest was explained by the stable trait component (ST), autoregressive trait component (ART), and state component (S) with the univariate latent STARTS model (Kenny & Zautra, 1995) using the lavaan package (Rosseel, 2012) in R (R Core Team, 2018). ST represents a trait component that does not change, ART represents an autoregressive component that is a function of the construct at the previous time point, and S represents a state component that includes measurement error and time-specific variance.

In the STARTS model, the three latent components were assumed uncorrelated with each other; therefore, the covariances among the components were set to zero. Moreover, the loadings of ART, the coefficients of the autoregressive paths, the loadings of ST, and the variances of S were all constrained to be equal across time points. This step allowed us to understand the sources of the variation in the longitudinal measurements.

We evaluated model fit using a number of indices recommended by Kline (2015), including the model chi-square with its degrees of freedom and p value, the Steiger-Lind root mean square error of approximation (RMSEA; Steiger, 1990) and its 90% confidence interval, the Bentler comparative fit index (CFI; Bentler, 1990), and the standardized root mean square residual (SRMR). For the model chi-square test, nonsignificant test results indicated an excellent fit. RMSEA values below 0.05 were indicative of close fit (Browne & Cudeck, 1992), and an RMSEA 90% lower confidence limit less than 0.05% and 90% upper confidence limit less than 0.08 were considered acceptable. CFI values greater than .95 and SRMR values less than .08 further indicated a good fit (Hu & Bentler, 1999). To accommodate nonnormality, the RI-CLPM was estimated with the robust maximum likelihood estimator using the lavaan package in R.

RESULTS

Preliminary Analyses

Means, standard deviations, missing rates, internal consistencies, and correlations among the study variables and continuous demographic variables are presented in Table 1. The detailed two-sample comparison t -test results for the categorical demographic variables of marital status and race are shown in the Supporting Information (Table S1). The results of Little's Missing Completely at Random (MCAR) test indicated that the missing mechanism was MCAR $\chi^2(2,643) = 2,724.06, p = .13$. Therefore, the full information maximum likelihood method was used to handle the ignorable missing data.

Latent STARTS Model Results

To partition the variation into trait, autoregressive, and state variances in women's depressive symptoms, men's depressive symptoms, and

Table 1. Means, Standard Deviations, Missing Rates, and Internal Consistencies (α) of Main Study Variables and Covariates

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
<i>M</i>	3.89	4.00	8.29	6.94	3.94	4.01	6.98	6.86	3.90	4.01	7.52	7.51	3.88	3.99	7.40	7.17	3.84	3.97	7.61	7.15	3.77	3.94	8.91	7.91	30.04	15.08	15.28	4.30		
<i>SD</i>	0.82	0.80	7.51	6.06	0.87	0.84	7.41	6.55	0.85	0.82	7.62	7.28	0.96	0.84	7.55	6.89	0.98	0.91	8.30	7.89	0.99	0.91	8.77	7.16	4.98	2.33	2.65	3.46		
Missing rate	0.05	0.15	0.04	0.14	0.06	0.15	0.06	0.15	0.07	0.16	0.07	0.16	0.09	0.17	0.08	0.17	0.09	0.20	0.09	0.20	0.13	0.20	0.13	0.20	-	-	-	-	-	
α	0.84	0.82	0.89	0.83	NA	0.85	0.89	0.85	0.86	0.86	0.90	0.88	0.90	0.87	0.89	0.86	0.90	0.88	0.91	0.90	0.90	0.88	0.91	0.88	-	-	-	-		
1. WRIntimacy1	0.37**																													
2. WRIntimacy2	-0.39**	-0.13																												
3. WDep1	-0.19**	-0.40**	0.20**																											
4. MDep1	0.61**	0.35**	-0.32**	-0.18**																										
5. WRIntimacy2	0.37**	0.60**	-0.10**	-0.32**	0.39**																									
6. MRIntimacy2	-0.32**	-0.11**	0.53**	0.09**	-0.45**	-0.14**																								
7. WDep2	-0.17**	-0.31**	0.17**	0.51**	-0.20**	-0.44**	0.17**																							
8. MDep2	0.57**	0.31**	-0.23**	-0.20**	0.65**	0.39**	-0.28**	-0.21**																						
9. WRIntimacy3	-0.30**	-0.09**	0.47**	0.10**	-0.33**	-0.14**	0.49**	0.11**	-0.41**	-0.16**																				
10. MRIntimacy3	0.35**	0.59**	-0.07**	-0.30**	0.40**	0.66**	-0.13**	-0.30**	0.49**																					
11. WDep3	-0.20**	-0.31**	0.20**	0.50**	-0.17**	-0.33**	0.17**	0.53**	-0.24**	-0.42**	0.18**																			
12. MDep3	0.52**	0.27**	-0.28**	-0.20**	0.62**	0.31**	-0.31**	-0.20**	0.68**	0.44**	-0.41**	-0.26**																		
13. WRIntimacy4	0.30**	0.56**	-0.10**	-0.30**	0.36**	0.63**	-0.13**	-0.34**	0.42**	0.74**	-0.20**	-0.40**	0.48**																	
14. MRIntimacy4	-0.29**	-0.03**	0.45**	0.09**	-0.33**	-0.08**	0.44**	0.09**	-0.32**	-0.11**	0.59**	0.11**	-0.47**	-0.21**																
15. WDep4	-0.18**	-0.29**	0.13**	0.50**	-0.17**	-0.32**	0.12**	0.48**	-0.21**	0.62**	-0.35**	0.12**	0.62**	-0.24**	-0.48**	0.14**														
16. MDep4	0.54**	0.29**	-0.25**	-0.15**	0.58**	0.32**	-0.29**	-0.15**	0.64**	0.42**	-0.32**	-0.23**	0.69**	0.46**	-0.34**	-0.22**	0.52**													
17. WRIntimacy5	0.30**	0.56**	-0.14**	-0.31**	0.36**	0.58**	-0.13**	-0.36**	0.42**	0.65**	-0.20**	-0.42**	0.43**	0.73**	-0.19**	-0.44**	0.52**													
18. MRIntimacy5	-0.25**	-0.05**	0.43**	0.11**	-0.28**	-0.08**	0.43**	0.12**	-0.23**	-0.07**	0.44**	0.11**	0.61**	-0.22**	-0.33**	0.14**	0.67**	-0.27**	-0.47**	0.18**										
19. WDep5	0.49**	0.30**	-0.25**	-0.13**	0.57**	0.34**	-0.33**	-0.17**	0.62**	0.37**	-0.31**	-0.21**	0.62**	0.39**	-0.29**	-0.17**	0.67**	0.39**	-0.32**	-0.21**										
20. MDep5	-0.28**	-0.10**	0.39**	0.13**	-0.31**	-0.13**	0.50**	0.17**	-0.29**	-0.16**	0.51**	0.20**	-0.33**	-0.20**	0.50**	0.14**	-0.35**	-0.20**	0.50**	0.23**	-0.48**	-0.27**								
21. WRIntimacy6	-0.19**	-0.31**	0.21**	0.40**	-0.21**	-0.32**	0.20**	0.45**	-0.27**	-0.32**	0.21**	0.52**	-0.19**	-0.35**	0.13**	0.52**	-0.23**	-0.40**	0.19**	0.58**	-0.31**	-0.49**	0.27**							
22. MRIntimacy6	-0.02**	-0.04**	-0.10**	-0.11**	0.00**	-0.07**	-0.06**	0.00**	-0.06**	0.00**	-0.13**	-0.08**	-0.02**	-0.03**	-0.05**	-0.06**	-0.05**	-0.05**	-0.12**	-0.08**	0.02**	0.01**	-0.06**	0.01**						
23. WDep6	0.07**	0.07**	-0.20**	-0.07**	0.14**	-0.01**	-0.20**	-0.13**	0.12**	0.01**	-0.19**	-0.09**	0.05**	0.02**	-0.14**	-0.09**	0.07**	0.06**	-0.15**	-0.16**	0.10**	0.02**	-0.21**	-0.15**	0.40**					
24. MDep6	0.10**	0.13**	-0.24**	-0.14**	0.14**	0.03**	-0.17**	-0.12**	0.11**	0.02**	-0.21**	-0.14**	0.08**	0.04**	-0.17**	-0.12**	0.01**	0.08**	-0.17**	-0.18**	0.11**	0.05**	-0.18**	-0.20**	0.33**	0.60**				
25. Women education	0.08**	0.05**	-0.17**	-0.10**	0.13**	0.02**	-0.12**	-0.10**	0.11**	0.03**	-0.15**	-0.09**	0.08**	0.04**	-0.12**	-0.06**	0.10**	0.04**	-0.17**	-0.10**	0.12**	0.07**	-0.16**	-0.13**	0.26**	0.39**	0.37**			
26. Income-to-needs ratio																														

Note: Raw data for women's relationship intimacy at Time 2 were not available. The data documentation indicated that all Cronbach's α s were greater than .70 for this scale. Specific time points are indicated by numbers: 1 = Time 1, 2 = Time 2, 3 = Time 3, 4 = Time 4, 5 = Time 5, 6 = Time 6. Dep = depressive symptoms; M = men; NA = not available; RelIntimacy = relationship intimacy; SD, standard deviation; W = women. * $p < .05$. ** $p < .01$.

Table 2. *Intraindividual Autoregressive and Cross-Lagged Effects Results of the Actor–Partner Random Intercept Cross-Lagged Panel Model*

Predictor	Outcome	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>
Autoregressive actor effects (within construct)					
WRelIntimacy (t)	WRelIntimacy (t + 1)	0.17***	0.04	4.58	<.001
WDep (t)	WDep (t + 1)	0.13***	0.04	3.64	<.001
MRelIntimacy (t)	MRelIntimacy (t + 1)	0.18***	0.04	4.22	<.001
MDep (t)	MDep (t + 1)	0.19**	0.06	3.44	.001
Cross-lagged actor effects (between construct)					
WDep (t)	WRelIntimacy (t + 1)	−0.01 [†]	0.00	−1.80	.072
WRelIntimacy (t)	WDep (t + 1)	−0.74**	0.27	−2.75	.006
MDep (t)	MRelIntimacy (t + 1)	−0.01*	0.00	−2.30	.022
MRelIntimacy (t)	MDep (t + 1)	−0.36	0.35	−1.02	.309
Cross-lagged partner effects (within construct)					
MRelIntimacy (t)	WRelIntimacy (t + 1)	0.12**	0.03	3.38	.001
MDep (t)	WDep (t + 1)	−0.02	0.03	−0.65	.514
WRelIntimacy (t)	MRelIntimacy (t + 1)	0.08**	0.03	2.8	.005
WDep (t)	MDep (t + 1)	0.02	0.02	0.86	.393
Cross-lagged partner effects (between construct)					
MDep (t)	WRelIntimacy (t + 1)	0.00	0.00	−0.51	.609
MRelIntimacy (t)	WDep (t + 1)	−0.61 [†]	0.33	−1.84	.066
WDep (t)	MRelIntimacy (t + 1)	0.00	0.00	−1.54	.124
WRelIntimacy (t)	MDep (t + 1)	−0.05	0.27	−0.17	.864

Note: Dep = depressive symptoms; M = men; RelIntimacy = relationship intimacy; (t) = earlier time point; (t+1) = the next time point; W = women. [†]*p* < .10, **p* < .05, ***p* < .01, ****p* < .001.

women’s and men’s relationship intimacy, we conducted four univariate models, one for each construct. For women’s relationship intimacy, we found that 33.4% of the variation were explained by the unchanging trait component, 38.9% was explained by the autoregressive component, and the remaining 27.7% was explained by the random state component. Moreover, 42.4%, 25.3%, and 32.3% of the variation in women’s depressive symptoms were explained by trait, autoregressive, and state components, respectively. For men’s relationship intimacy, 57.1% was explained by the trait component, 22.3% was explained by the autoregressive component, and 20.6% was explained by the state component. For men’s depressive symptoms, 48.5%, 17.4%, and 34.1% of the variation were explained by the trait, autoregressive, and state components, respectively.

RI-CLPM Results

The RI-CLPM including trait and state depressive symptoms and couple relationship intimacy for both men and women

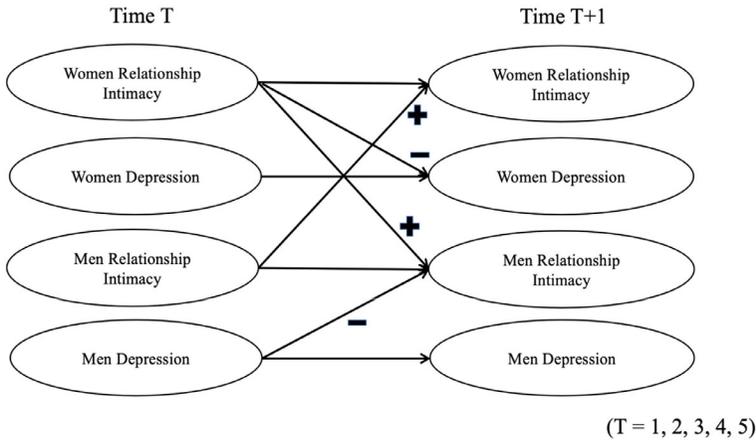
demonstrated good fit, $\chi^2(314) = 450.24$, *p* < .001; RMSEA = 0.027 (90% CI = 0.021, 0.033); CFI = .98; SRMR = .05.

Within-Individual Links. The within-individual associations are summarized in Table 2 and Figure 2.

Hypothesis 1. As shown in the first block of Table 2, the autoregressive paths showed that earlier women’s depressive symptoms predicted their own subsequent depressive symptoms. Similarly, earlier men’s depressive symptoms, women’s couple relationship intimacy, and men’s couple relationship intimacy predicted later men’s depressive symptoms, women’s couple relationship intimacy, and men’s couple relationship intimacy, respectively.

Hypothesis 2. As shown in the second block of Table 2, the results of the cross-lagged actor effect paths showed that better women’s couple relationship intimacy (when compared with their typical level) predicted lower levels of women’s depressive symptoms within the individual at the next time point, and the reverse was not true. Moreover, lower levels of men’s depressive symptoms predicted better men’s relationship

FIGURE 2. VISUAL SUMMARY OF THE MAIN FINDINGS IN THE RANDOM INTERCEPT CROSS-LAGGED PANEL MODEL.



intimacy than their typical level, whereas the other direction was nonsignificant.

Hypothesis 3. The results of the cross-lagged within-construct partner effects (displayed in the third block of Table 2) showed that higher (than personal average) couple relationship intimacy perceived by men and women predicted their partner's perceptions of higher couple relationship intimacy at the next time point. We did not find any within-individual cross-lagged links between one's own depressive symptoms and one's partner's depressive symptoms after accounting for the between-individual associations and demographic covariates.

Hypothesis 4. Neither did we find significant cross-lagged partner effects across constructs between one's depressive symptoms and one's partner's couple relationship intimacy (see the fourth block of Table 2). To ensure that these results were not statistical artifacts from this one complex four-variable RI-CLPM and can be replicated in simpler models, we computed six separate bivariate RI-CLPM and confirmed that the effects in the four-variable model remained evident in the bivariate models (see Figure S2 in the Supporting Information for detailed results).

Between-Individual Links and Demographic Covariates. Between-individual associations among men's and women's depressive symptoms and perceptions of relationship intimacy were as anticipated and are presented Tables S2 and S3 in the Supporting Information. The associations between demographic covariates

and trait components of women's and men's relationship intimacy and men's and women's depressive symptoms are also included in the Supporting Information along with a brief textual summary of the significant associations.

DISCUSSION

The present study was the first to test a comprehensive transactional model of depressive symptoms and couple relationship intimacy perceived by both partners, benefiting from multiwave longitudinal data with a relatively large sample size and advanced multivariate data analytical techniques. The current study improved on and distinguished itself from the previous literature in two key ways. First, by partitioning the constructs into trait (i.e., between-individual) and state (i.e., within-individual) variances, the current study addressed whether change in depressive symptoms (or intimacy) for one partner from their typical level is associated with change in couple relationship intimacy (or depressive symptoms) from their typical level for both oneself and one's partner. By contrast, the past literature failed to distinguish within-individual associations from (arguably less interesting) between-individual effects (e.g., when compared with more depressed individuals, less depressed individuals have greater intimacy in their relationships). Thus, the previous literature detected a mixture of between-individual and within-individual effects, whereas we were

able to isolate within-individual effects. Second, building on the existing literature on the association between depressive symptoms and more global relationship constructs (e.g., relationship quality), the current study adopted a novel focus on couple relationship intimacy, an emotional aspect of couple relationships that is formed via interpersonal processes, especially communication processes that involve self-disclosure (Reis & Shaver, 1988) and may be particularly affected by the information processing biases and negative expectations of self and others characteristic of depression (Beck & Bredemeier, 2016).

Our findings underscore the significance of considering close interpersonal relationships in efforts to understand and promote mental health. Specifically, regarding the prospective associations across depression and relationship intimacy, we found that women's greater (than personal average) relationship intimacy predicted intraindividual decreases in women's depressive symptoms. For men, higher (than personal average) levels of depressive symptoms predicted intraindividual declines in relationship intimacy. Regarding relationship intimacy across partners, we found that one's greater rating of relationship intimacy (when compared with the personal typical level) predicted an intraindividual increase in their partner's perceptions of relationship intimacy at the next time point.

Relationship Intimacy and Depressive Symptoms: Actor Effects

Greater women's couple relationship intimacy (when compared with their typical level) predicted lower levels of women's depressive symptoms at the next time point. This is consistent with previous findings that higher quality couple relationships are associated with fewer depressive symptoms (Du Rocher Schudlich et al., 2011; Figueiredo et al., 2018). At the transition to parenthood, mothers and fathers with high negative couple interaction scores experienced a steeper increase in depression from 3- to 30-months postpartum (Figueiredo et al., 2018). Du Rocher Schudlich et al. (2011) found that marital dissatisfaction can be associated with depressive symptoms through increasing depressive conflict and decreasing constructive conflict.

In contrast, we found that higher levels of men's depressive symptoms (when compared

with their typical level) prospectively predicted a decline in self-perceived couple relationship intimacy. This association has been previously detected in diverse populations: Roberson, Lenger et al. (2018) found that depression was related to lower levels of subsequent relationship satisfaction only for women. In two other studies, depressive symptoms of both men and women were associated with declines in one's own perception of couple relationship quality (Knobloch & Knobloch-Fedders, 2010), more so for White couples than for African American couples (MacKenzie et al., 2014). Our findings were somewhat inconsistent with the existing literature, which has found that women's depressive symptoms portended more problematic couple relationships. In contrast, we only found this prospective link among men. This discrepancy may be attributed to the appropriate modeling of within-individual versus between-individual effects using RI-CLPM in the current study, which had not been done in previous work.

Interestingly, among men and women, we found reverse associations between depressive symptoms and self-perceived couple relationship intimacy. For men, depressive symptoms might precede couple relationship intimacy, whereas for women, depressive symptoms might follow (or be subsequent to) a problematic couple relationship. These findings replicate Fincham et al.'s (1997) findings on the causal direction between marital satisfaction and depressive symptoms among 150 pairs of husbands and wives observed during an 18-month postmarriage interval. Our findings are also consistent with Dehle and Weiss's (1998) investigation on sex differences in the longitudinal relations between marital quality and depressed mood among 47 recently married couples during a 3-month interval, where they found that the prospective links between marital quality and depressed mood were stronger for women than for men.

Here we offer some post hoc speculations regarding the gender differences in temporal precedence we uncovered. For women, changes in relationship intimacy may precipitate changes in depressive symptoms for several reasons. Women may be more empathetic in social relationships (Rueckert & Naybar, 2008), and higher empathy may be one of the mechanisms linking close relationships to psychological well-being (Thoits, 2011).

Furthermore, interpersonal relationships may be more central to personal identity for women than for men, as girls may be socialized to place greater value on close relationships than boys (Burlleson, 2003). Individuals with higher levels of sociotropy (i.e., investment in interpersonal relationships) are more sensitive to interpersonal stress, which may, in turn, render them vulnerable to depressive symptoms (Beck & Bredemeier, 2016). As for the link between depressive symptoms and subsequent decline in relationship intimacy among men but not women, it could be because depressed individuals less frequently engage in sex (Nicolosi, Moreira Villa, & Glasser, 2004)—a component of romantic relationships more valued by men than women in different-sex couples (Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006). Moreover, depression may result in men's detachment from the relationship, loss of interest and pleasure in activities, and irritability, all of which could thwart the development and maintenance of relationship intimacy (Knobloch & Knobloch-Fedders, 2010).

Relationship Intimacy: Partner Effects

We also found that partners' perceptions of relationship intimacy were interrelated, such that greater couple relationship intimacy perceived by one partner predicted their partner's higher subsequent ratings of couple relationship intimacy. This finding is consistent with theory and the growing literature on the interdependence of partners' experiences in couple relationships (e.g., Rehman et al., 2008; Yan, Olsavsky, Schoppe-Sullivan, & Kamp Dush, 2018). The prospective associations of one's perception of couple relationship intimacy with one's partner's subsequent perception of relationship intimacy may be explained or mediated by some aspects of couple interaction processes. For example, partners who perceive greater intimacy may engage in more effective communication, disclosure, conflict resolution, and share positive activities more often, which could contribute to their partner's perceptions of greater intimacy (Overall & McNulty, 2017). Moreover, partners who perceive their relationship to be more intimate may be more likely to engage in frequent, positive, and satisfying sexual behaviors (Witherow, Chandraiah, Seals, & Bugan, 2016), which may lead to increased perceptions of

intimacy by their partners (Schoenfeld, Loving, Pope, Huston, & Stulhofer, 2017).

Other Findings

We did not find support for partner effects in the prospective links between couple relationship intimacy and depressive symptoms (or vice versa). Neither did we find support for partner effects linking men's and women's depressive symptoms. It could be that, in the complex dynamics linking close relationships and individual and partner well-being, these paths were not prominent after the other significant sources of antecedents were taken into account. We did find that considerable amounts of variance in men's and women's reports of depressive symptoms and couple relationship intimacy across time can be attributed to trait constructs, state constructs, and autoregressive variance. Specifically, 33% of the variation in women's couple relationship intimacy, 42% of the variation in women's depressive symptoms, 57% of the variation in men's couple relationship intimacy, and 49% of the variation in men's depressive symptoms across six waves were attributable to trait constructs. The percentages we found are consistent with other studies: A recent study of big five personality among two national samples across three waves reported that the proportion of trait variance typically ranged from 40% to 70% for the five dimensions of personality (Wagner, Lüdtke, & Robitzsch, 2019).

Limitations

The findings should be interpreted with several limitations in mind. First, the general NICHD sample, and particularly the current selected sample, contained disproportionately European American, married, highly educated, and higher income couples who gave birth to at least one child and stayed together at least until that child reached the age of 15. Individuals who perceive very low intimacy in their relationships or experience severe depressive symptoms may have less stable relationships. Thus, by focusing on couples who were married or cohabiting for at least 15 years, our sample may have had a restricted range in couple relationship intimacy and possibly also depressive symptoms. Moreover, in light of their relatively high levels of social and economic resources, couples in our sample may have been more

resilient to inter- and intrapersonal problems than couples in the general population. The dynamics linking couple relationship intimacy and depressive symptoms in other populations of couples may be different. For example, for couples who ended their relationships prior to 15 years, men's depressive symptoms may have indeed predicted women's lack of perceived intimacy. Moreover, the couples in our study were all different-sex couples, and different results may be obtained for same-sex couples, especially considering the gender differences we uncovered. Therefore, the transactional associations between couple relationship intimacy and depressive symptoms within more diverse populations—including same-sex couples and those with less-stable relationships—need to be further examined. Second, couple relationship intimacy and depressive symptoms of men and women were all measured with self-reports, which may be subject to response bias. Future studies should more carefully examine the mechanisms underlying the transactional associations between depressive symptoms and couple relationship functioning (partner effects in particular) by using observational measures or physiological measures to capture the aspects of couple interaction processes that may link couple relationship perceptions and depressive symptoms. Finally, although our sample size was appropriate for testing RI-CLPM models, it was not large enough to estimate changes in within-individual associations over time.

Contribution and Implications

This was the first study to test a comprehensive transactional model of depressive symptoms and couple relationship intimacy using longitudinal data across 10 years and taking advantage of advances in multivariate data analytical techniques to reveal associations between couple relationship intimacy and not only one's own but also one's partner's depressive symptoms and to further isolate the within-individual associations between couple relationship intimacy and depressive symptoms. Our findings, which highlight the temporal precedence of couple relationship intimacy in associations with depressive symptoms among women and the reverse directionality among men as well as the interdependence of partners' perceptions of relationship intimacy, underscore the significance of considering close interpersonal relationships and a

family systemic perspective in efforts to understand and promote mental health and can inform practitioner efforts to reduce depression, facilitate mental health, and improve family functioning. Emotionally disconnected couples may be difficult to treat when it appears to be the main problem (i.e., when couples are low in positivity but also low in conflict). Intervention research designed to boost couples' emotional intimacy is strongly encouraged and warranted. Indeed, as our findings have suggested, interventions to improve couple intimacy may beget a virtuous cycle of increased intimacy for both partners and may also boost individual mental health.

NOTE

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. Supporting Information.

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