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Depressed mood and perception of negative partner behavior in couple interactions: A daily diary study

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Abstract

Despite extensive research on depression and couple interactions, little is known about how depressed mood influences couples' experience of everyday life interactions. In this study, data were gathered from 72 different-gender couples ($N = 144$ individuals), who reported their feelings, behavior, and perceptions of their partner's behavior several times a day over 14 days. The study revealed that when individuals reported feeling more depressed, they perceived their romantic partner's behavior as more distant and hurtful, and they felt treated worse and more rejected. Moreover, when individuals reported feeling more depressed, their romantic partners perceived them as more distant, and they reported feeling treated worse and more rejected. However, depressed mood did not predict subsequent relationship perceptions in time-lagged associations, and the directionality from relationship perceptions to depressed mood was inconclusive.

Statement of Relevance: This study shows that depressed mood is linked to how individuals perceive their partner's behavior and treatment in daily interactions, as well as how their partner perceives and feels treated by the individual experiencing depressed mood. These findings highlight the importance of addressing depressed mood in a dyadic context, as it may affect both partners.

1 | INTRODUCTION

Examining momentary associations between depressive symptoms and relationship functioning is of utmost importance due to their cyclical influence on each other and their potential for cumulative and compounding effects on overall well-being (Wichers, 2014). Numerous observational studies have indicated that couples with a depressed partner tend to exhibit more negative and less positive affect as compared to couples without a depressed partner (Davila et al., 1997; McCabe & Gotlib, 1993; Rehman et al., 2008). Despite the substantial body of research on depression and couple interactions, few studies have explored how depressed mood shapes couples' day-to-day interactions and relationship functioning.

Taking a dyadic approach is essential for identifying processes that contribute to declines in both partners' individual and relationship functioning. Existing research on depression in romantic relationships has predominantly focused on the adverse effects of a person's depression on their personal and romantic functioning, with relatively less attention given to understanding how a person's depression is associated with their partner's well-being and experience (but see Gilmour et al., 2022; Horn et al., 2017; Wong et al., 2023 for cross-partner associations). Continuing to explore this is important because partners of individuals with depressed moods face a high risk of experiencing depression themselves (e.g., Baucom et al., 2018; Benazon & Coyne, 2000). This study aims to explore momentary associations between depressed mood and how partners perceive each other's behavior during interactions, along with how partners perceive their treatment by one another in these interactions.

2 | DEPRESSIVE SYMPTOMS AND RELATIONSHIP FUNCTIONING

Research indicates that depression and depressive symptoms are associated with lower levels of relationship functioning (Gilmour et al., 2022; Goldfarb & Trudel, 2019; Whisman et al., 2021). Interpersonal models of depression propose that depressed individuals tend to experience higher rates of negative interpersonal events as compared to non-depressed individuals because they actively contribute to interpersonal stressors through certain dispositions and maladaptive relationship behaviors (Coyne, 1976; Hammen, 2006, 2018; Liu, 2013). For example, one such behavior is excessive reassurance seeking, where depressed individuals frequently seek reassurance from their partners to validate their self-worth. However, over time, this behavior can create frustration in the partner, leading to feelings of rejection in the depressed individual, thereby exacerbating depressive symptoms. This perspective finds support in research that links depressive symptoms to greater perceived rejection from romantic partners (Weinstock & Whisman, 2004). Furthermore, a study conducted by McCabe and Gotlib (1993) revealed that couples with a depressed partner tend to perceive each other as more dominant, hostile, and less friendly following conflict discussions, compared to couples

without a depressed partner. Building on this theoretical framework, it is conceivable that as the partner's behavior changes (e.g., the behavior increases in negativity or reassurance reduces), the depressed partner may increasingly perceive more negative behavior from their partner and feel rejected by them in their daily interactions. Examining the association between depressive symptoms and relationship dysfunction is important because they can form a cycle where they exacerbate each other over time (Goldfarb & Trudel, 2019), as inter-personal models of depression suggest.

While research has shown that nondepressed partners may have a particularly critical attitude toward their depressed partners (Levkovitz et al., 2003), it is also important to consider that depressed individuals may be more prone to perceive their partner's behavior as overly negative, as implied by the *depression distortion hypothesis* (Bathina et al., 2021). Research also indicates that individuals with more depressive symptoms tend to overestimate their partner's increases in negative behavior in daily life (Overall & Hammond, 2013).

3 | THE IMPORTANCE OF EXAMINING CROSS-PARTNER ASSOCIATIONS

There is evidence that depressed mood and depressive symptoms can be transmitted between romantic partners (for a meta-analysis, see Joiner & Katz, 1999). The positive association between romantic partners' depressive symptoms has been found in both cross-sectional (Dudek et al., 2001) and longitudinal studies (Wong et al., 2023). A qualitative study with 135 couples revealed that nondepressed partners tend to be strongly affected by their depressed partner's mood alterations, and that both partners experience reduced emotional and sexual intimacy, and more negative interactional patterns (Sharabi et al., 2016). Thus, depressive symptoms are associated with both one's own and their partners' relationship functioning (Morgan et al., 2018; Whisman & Uebelacker, 2009).

According to the emotions as social information (EASI) model (van Kleef, 2009), one's depressed mood may increase their partner's negative perceptions through (1) negative emotion contagion or (2) their partner's misattributions of the negative mood to the relationship. Apart from biasing perceptions, depression may also reduce dyadic behaviors that are known to promote closeness between romantic partners. Horn et al. (2017) found that depressive symptoms were associated with reduced sharing of positive experiences and feelings in both partners, leading to a decline in both partners' relationship quality. These findings highlight the importance of looking beyond the individual when examining the effects of depressive symptoms, due to the burden they can place on relationships.

4 | THE IMPORTANCE OF EXAMINING DAILY ASSOCIATIONS

To examine the links among depression and relationship functioning in couple interactions, most studies have relied on retrospective self-report and observational data from lab discussions like conflict conversations that generate strong emotions in romantic partners (Rehman et al., 2008). However, couples encounter a variety of situations of different valence and emotional intensity level in daily life (Moskowitz et al., 2009) that are not always reflected by these methods. Daily diary studies capture situational variability by assessing relationship experiences

at multiple moments in the natural environment and close to real time (Shiffman et al., 2008), which is crucial when examining depressed mood, due to the tendency of individuals to over-estimate their past reports of negative mood (Sato & Kawahara, 2011).

Moreover, daily diaries allow for the examination of how processes unfold (Brock et al., 2019; Smith et al., 2012). For example, Brock et al. (2019) found reciprocal associations between mood deterioration and declining satisfaction with daily interactions with one's romantic partner. Further, couples' perception of each other may vary as a function of depressed mood, as depressed individuals tend to perceive their daily interactions with romantic partners as more distant and less enjoyable (Nezlek et al., 2000). More research is needed to explore how these daily fluctuations of depressed mood impact one's own and their partner's perception.

5 | THE CURRENT STUDY

To understand how depressed mood influences couples' everyday life interactions, the current study used momentary assessments over 14 days to examine whether depressed mood influenced (i) how partners perceived each other during these interactions, and (ii) how romantic partners felt they were treated in these interactions. In line with previous research (e.g., Nezlek et al., 2000), we predicted that when individuals experience more depressed mood, they would perceive their partners' behavior as more distant and more hurtful (H1a; actor effects), and that partners would also perceive them as more distant and hurtful (H1b; partner effects). Consistent with the interactional theory of depression (Coyne, 1976) we hypothesized that when individuals experience more depressed mood, they would report feeling more rejected and badly treated by their partners (H2a; actor effect), and that partners would also report feeling more rejected and treated badly by them (H2b; partner effect). Our primary interest was the immediate effects of depressed mood on perception of partner behavior.

Longitudinal studies on depression and relationship functioning reveal a bidirectional association (e.g., Davila et al., 2003; Morgan et al., 2018; Whisman & Uebelacker, 2009), with a stronger effect of relationship dysfunction prospectively predicting depressive symptoms than the reverse temporal direction (Barton et al., 2022; Braithwaite & Holt-Lunstad, 2017; Whisman et al., 2021). Thus, to further explore this, we examined time-lagged associations between depressed mood and perceptions of partner behavior in both directions.

6 | METHOD

6.1 | Recruitment and participants

After receiving approval from the institutional review board, couples were recruited from a university's mailing lists and via flyers on the campus from March 2015 to January 2017. Participants were eligible to take part in the study if they were at least 18 years old, in a committed relationship for at least 3 months, and had sufficient fluency in German to complete the ambulatory assessment form.

Out of the 75 eligible couples ($N = 150$ individuals), 73 completed the baseline questionnaire, and 72 ($N = 144$ individuals) completed the ambulatory assessment forms. Among these

couples, 2 (2.8%) provided 4 days of assessment data, while 68 couples (94.4%) provided at least 7 days, 59 (81.9%) provided at least 10 days, and 41 couples (56.9%) completed all 14 days of assessment. The sample was limited in diversity, all participants identified as Caucasian and heterosexual. Women's age ranged from 19 to 57 years ($M = 23.48$, $SD = 7.07$), and men's from 18 to 58 years ($M = 25.89$, $SD = 7.64$). The sample was highly educated, with more than half being graduate students (69.9%). Most couples were unmarried (94.5%), childless (94.5%), and not cohabiting (77.2%). Relationship length ranged from 3 months to over 10 years, with most couples (50.7%) being together between 3 months and 2 years (26.8% of the sample 3 months to 1 year, 23.9% of the sample 1–2 years).

6.2 | Procedure

Participants first completed a baseline questionnaire, reporting demographics, relationship satisfaction, and depressive symptoms. They then completed a two-week smartphone-based ambulatory assessment, with four assessments per day (upon awakening, 12 pm, 6 pm, before bedtime). Each daily assessment took approximately 3 min to complete. Every couple had an introductory session with the lead researcher where they completed a trial run to familiarize themselves with the smartphones and asked any questions.

Participants were instructed not to provide retrospective reports for missed time points. After the study, participants were debriefed, and each partner was compensated with either 50 Swiss francs (∼ 50 USD) or course credit.

6.3 | Measures

6.3.1 | Daily diary measures

Depressed mood
At each of the four assessments, participants rated the degree to which they currently felt "depressed" on an 8-point scale ranging from 0 *(not at all)* to 7 *(very)*. This single-item measure was used to reduce participant burden and increase compliance with daily assessments.

Perception of partner's behavior and reports of own behavior
Participants reported their recent social interactions by answering, "With whom did you have contact in the last hour?" If they had contact with their partner, they rated on an 8-point scale ranging from 0 (*not at all*) to 7 (*very*) how "hurtful" and "distant" the partner was during the interaction, and whether they felt "treated badly" and "rejected." Participants also rated how "hurtful" and "distant" they were toward their partner.

6.3.2 | Baseline questionnaires

Depressive symptoms
The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to assess participant's depression level. The scale measures depressed affect, positive affect, somatic complaints, and interpersonal problems over the past week on a 4-point scale from

0 (*rarely or none of the time*) to 3 (*most or all of the time*). Pairwise deletion was used to handle two missing values among men and three missing values among women. The Cronbach's alpha was 0.86. Scores ranged from 0 to 33.5 ($M = 10.41$, $SD = 7.12$), and 18.7% (11 men and 15 women) scored at or above the cut-off of 16 that is commonly used to identify individuals at risk for clinical depression.

Relationship satisfaction

Relationship satisfaction was assessed with five items from the Quality of Marriage Index (QMI; Norton, 1983) adapted for non-married couples. Each item (e.g., "*my relationship with my partner makes me happy*") was rated on a 6-point scale ranging from 1 (*very strong disagreement*) to 6 (*very strong agreement*). The average score for each participant was computed, with higher scores indicating higher levels of relationship satisfaction. The Cronbach's alpha was .89.

6.4 ⎮ Data analysis

6.4.1 ⎮ Preliminary analyses: Bivariate correlations

To test the associations between our variables of interest, zero-order correlations were computed separately for men and women (see Table 1). Men and women's CES-D scores were not significantly correlated. However, there were significant positive correlations between their average depressed mood, perceptions of partner's behaviors, own hurtful and own distancing behaviors.

Higher CES-D scores were linked to higher levels of depressed mood in both men and women. For men, higher CES-D was related to greater perception of hurtful behavior and greater reports of hurtful behavior toward their partner and more distancing from them. Among women, higher CES-D was associated with greater perception of partner rejection and distance. Men and women's QMI scores were positively correlated. Men with higher QMI scores perceived less rejection and distance from their partner, felt less badly treated by them and reported less hurtful and distancing behaviors toward their partners. Women with higher QMI scores felt less rejected and perceived less distance from their partners. Men who were older felt more rejected and similarly, men who had at least one child felt more rejected, while no such correlations were found among women. Women with longer relationships felt less rejected by their partners, and those who lived with their partners also tended to report lower perceived rejection.

Men and women who reported more depressed mood perceived more rejection, hurtful behavior, and distance, and felt treated worse by their partner. They also reported being more hurtful and distant toward their partner. Moreover, those who perceived their partner's behavior as more negative were more likely to report engaging in hurtful and distant toward their partner.

6.4.2 ⎮ Main analyses

We applied an over-time actor-partner interdependence model (APIM; Kenny et al., 2006) for distinguishable dyads to examine actor and partner effects of depressed mood on perception of partner behavior at the within and between-person levels. Momentary reports (Level 1) were modeled as nested within couples (Level 2), with two sets of parameters per couple, one for

TABLE 1 Bivariate correlations among men's and women's scores on variables of interest.

	Age	CES-D	QMI	Child	Relationship length	Cohabitation	Income	Depressed mood	Felt rejection	Hurtful behavior	Perceived distance	Feeling treated badly	Own hurtful behavior	Own distancing	Men M (SD)
Age	.90***	−0.14	0.04	.84***	.42***	.42***	.38***	0.14	.31**	0.17	0.15	.22†	.23†	0.16	25.89 (7.64)
CES-D	−0.14	0.14	−0.16	−0.06	−0.15	0.03	0.13	.34**	0.06	.42***	0.17	.21†	.30**	.35***	9.51 (7.12)
QMI	−0.04	−0.12	.52***	0.07	.35*	.27*	0.07	−0.09	−.25*	−.22†	−.25*	−.27*	−.31**	−.36**	5.18 (0.86)
Child	.93***	−0.01	−0.06	1***	.40***	.39***	.24*	0.18	.27*	0.17	0.12	.20†	0.19	0.13	-
Relationship length	.53***	0.08	−0.06	.40***	1***	.56***	0.15	0.14	−0.13	−0.02	−0.05	−0.05	−0.02	0.02	-
Cohabitation	.51***	0.07	0.14	.39***	.55***	1***	0.20	0.17	0.14	0.17	−0.01	0.18	0.02	0.00	-
Income	0.16	−0.04	0.21	0.19	0.15	0.17	0.11	0.01	0.12	0.17	.21†	0.06	.20†	.27*	-
Depressed mood	−0.12	.34**	−0.06	−0.12	−0.03	−0.16	−0.11	.30*	.36***	.39***	.48***	.38***	.26*	.47***	1.14 (0.78)
Felt rejection	−0.18	.26*	−.26*	−0.11	−.28**	−.26*	−0.07	.51***	.32**	.56***	.73***	.86***	.52***	.44***	0.72 (0.49)
Perceived hurtful behavior	−0.15	0.20	−0.20	−0.09	−.22†	−.22†	−0.04	.49***	.72***	.35***	.53***	.82***	.81***	.56***	0.67 (0.47)
Perceived distance	−0.14	.25*	−.34**	−0.11	−0.12	−0.12	−0.08	.57***	.79***	.74***	.30*	.71***	.51***	.76***	0.89 (0.59)
Feeling treated badly	−0.05	.21†	−.23†	−0.02	−.21†	−0.20	−0.10	.54***	.90***	.82***	.72***	.47***	.75***	.56***	0.70 (0.47)
Own hurtful behavior	−0.16	0.13	−0.18	−0.11	−.20†	−0.14	0.00	.53***	.59***	.81***	.64***	.62***	.49***	.58***	0.61 (0.41)
Own distancing	−0.15	0.19	−0.13	−0.14	−.24*	−0.20	0.05	.64***	.62***	.65***	.59***	.63***	.67***	.39***	0.98 (0.67)
Women M (SD)	23.48 (7.07)	11.33 (7.05)	5.46 (0.67)	-	-	-	-	1.02 (0.74)	0.64 (0.50)	0.47 (0.39)	0.65 (0.56)	0.55 (0.45)	0.48 (0.42)	0.71 (0.51)	

Note: N = 72 different-gender dyads; Correlations between men's scores on variables of interest appear above the diagonal (values on diagonal italicized and shaded in gray) while correlations between women's scores appear below the diagonal. Correlations between men's and women's scores on the same variable are presented along the diagonal. Children (0 = no children, 1 = at least one child), cohabitation (0 = not living with partner, 1 = living with partner), and relationship length are between-dyad variables.

†$p < .10$;

*$p < .05$; **$p < .01$; ***$p < .001$; two-tailed.

each partner in the relationship. Residual terms were allowed to be correlated between partners. Models were run with RStudio using the *dyadr*-package and the *lme* function from the *nlme*-package. At Level 1, momentary reports of depressed mood were used as a within-person predictor, centered at each person's mean. At Level 2, each person's depressed mood reports were averaged across the 14-day assessment period.

We ran separate models for each of our four outcome variables. We controlled for the individual's perceptions of their partner's behavior at the previous time point (t-1), rendering the outcome a latent change score. We controlled for potential confounding variables, based on the bivariate correlations (see Table 1). Thus, we included QMI, CES-D, age, relationship length, cohabitation and having kids in the model. After testing the models with and without all potential control variables, we dropped the nonsignificant control variables from the models. Our final models only included age and relationship length as control variables. To further examine whether a depressed individual's perception of distant and hurtful partner behavior corresponds to or varies from their romantic partner's reports of their own behavior, we re-ran the analyses for the outcome variables "perceptions of distant behavior" and "perceptions of hurtful behavior" controlling for both partners self-reports of own distancing and hurtful behaviors.

In addition, we explored time-lagged associations in both directions, testing whether depressed mood and perceptions of partner behavior prospectively predicted partner perceptions or depressed mood across the subsequent few hours. We tested lagged depressed mood (t-1) as a predictor of perception of partner behavior, while adjusting for lagged perceptions of partner behavior. Likewise, we tested lagged perception of behavior (t-1) as a predictor of depressed mood, adjusting for the previous depressed mood report.

7 | RESULTS

7.1 | Distant behavior

7.1.1 | Concurrent change

Both women and men reporting higher levels of depressed mood perceived their partners' behavior as more distant as compared to the previous measurement (women: $b = .19$, $p < .001$; men: $b = .31$, $p < .001$). Additionally, partner effects emerged: when women ($b = .16$, $p < .001$) and men ($b = .12$, $p = .010$) were feeling more depressed, they were perceived by their partner as more distant than at the prior assessment (see Table 2).

The actor effects remained unchanged after controlling for both partner's self-reported distancing behavior, as well as the partner effect of women's depressed mood on men's perceptions of women's distant behavior. However, men's depressed mood was no longer associated with changes in women's perception of men's distant behavior (see supplementary material, Table S1).

7.1.2 | Lagged associations

Depressed mood as predictor of perception of distant behavior
Depressed mood did not predict one's perceptions of the partners behavior prospectively (women: $b = -.02$, $p = .396$; men: $b = .02$, $p = .443$). Furthermore, an individual's depressed mood did not predict how they were perceived by their partners in subsequent reports (women's

TABLE 2 Associations between depressed mood and perceptions of distant and hurtful behavior.

Variable	Perception of distant behavior				Perception of hurtful behavior			
	b	SE	95% CI (LL, UL)		b	SE	95% CI (LL, UL)	
Intercept women	.24*	0.12	0.00	0.47	.33*	0.14	0.07	0.59
Intercept men	0.09	0.18	−0.26	0.44	−0.01	0.15	−0.31	0.29
Actor effects								
Womens depressed mood	.19***	0.03	0.13	0.25	.10***	0.02	0.05	0.15
Mens depressed mood	.31***	0.04	0.24	0.39	.19***	0.03	0.13	0.25
Womens previous perception	.12***	0.02	0.07	0.16	.09***	0.02	0.04	0.14
Mens previous perception	.08***	0.02	0.04	0.13	0.00	0.02	−0.04	0.05
Partner effects								
Womens depressed mood	.16***	0.03	0.10	0.22	.09***	0.02	0.04	0.13
Mens depressed mood	.12*	0.05	0.03	0.22	0.03	0.02	−0.02	0.07
Womens previous perception	−.05†	0.03	−0.10	0.01	0.04	0.03	−0.02	0.10
Mens previous perception	.06***	0.02	0.02	0.09	.07***	0.02	0.03	0.10
Actor effects								
Womens average depressed mood	.22***	0.04	0.14	0.31	.18**	0.05	0.09	0.28
Mens average depressed mood	.28***	0.06	0.16	0.40	.15**	0.05	0.05	0.25
Partner effects								
Womens average depressed mood	.19**	0.06	0.06	0.31	.11*	0.05	0.00	0.21
Mens average depressed mood	0.04	0.04	−0.04	0.12	−0.04	0.05	−0.13	0.05
Control variables								
Age women	0.00	0.01	−0.01	0.01	−0.00	0.01	−0.01	0.01
Age men	.02*	0.01	0.00	0.03	.02***	0.01	0.01	0.03
Relationship length women	−0.02	0.02	−0.05	0.01	−0.01	0.02	−0.05	0.02
Relationship length men	−.034†	0.02	−0.08	0.01	−.03†	0.02	−0.07	0.00
Marginal R^2	0.27				0.17			
Conditional R^2	0.53				0.46			

Note: $N = 72$ different-gender dyads. Age is a within person variable, relationship length is a between person variable.

Abbreviations: CI, confidence interval; LL, lower limit; UL, upper limit.

$^{\dagger}p < .10$;

*$p < .05$; **$p < .01$; ***$p < .001$.

depressed mood on men's perception: $b = .02$, $p = .392$; men's depressed mood on women's perception: $b = .00$, $p = .982$, see supplementary material, Table S3).

Perception of distant behavior as predictor of depressed mood

An individual's perceptions of distant behavior did not predict subsequent depressed mood (women: $b = −.01$, $p = .804$, men: $b = .06$, $p = .140$), nor did it predict the partner's subsequent depressed mood (women's perception on men's depressed mood: $b = −.00$, $p = .971$, men's perception of women's depressed mood: $b = .04$, $p = .246$; see supplementary material, Table S5).

7.2 | Hurtful behavior

7.2.1 | Concurrent change

Individuals reporting higher depressed mood perceived their partner's behavior as more hurtful compared to the prior measurement (women: $b = .10$, $p < .001$, men: $b = .19$, $p < .001$). Notably, partner effects emerged, wherein women's depressed mood influenced men's perception: when women felt more depressed, men perceived women's behavior as more hurtful ($b = .09$, $p < .001$). In contrast, men's depressed mood was not associated with changes in women's perception of men's hurtful behavior ($b = .03$, $p = .21$; see Table 2). The results remained consistent when adjusting for both partner's self-reported hurtful behavior (see supplementary material, Table S2).

7.2.2 | Lagged associations

Depressed mood as predictor of perception of hurtful behavior
Individuals' depressed mood did not predict perceptions of the partners hurtful behavior prospectively (women: $b = .00$, $p = .780$, men $b = -.01$, $p = .701$), nor did it predict how they were perceived by their partner in subsequent reports (women's depressed mood on men's perception: $b = .01$, $p = .804$; men's depressed mood on women's perception $b = -.04$, $p = .103$; see supplementary material, Table S3).

Perceiving hurtful behavior as predictor of depressed mood
Men's perception of hurtful behavior predicted subsequent increases in depressed mood ($b = .10$, $p = .033$) but this effect was not observed for women ($b = .05$, $p = .596$). No significant partner effects were found: women's perception of hurtful behavior did not predict men's depressed mood ($b = .03$, $p = .676$), similarly, men's perception of hurtful behavior did not predict women's depressed mood at the following time point ($b = .02$, $p = .656$; see supplementary material, Table S6).

7.3 | Being rejected

7.3.1 | Concurrent change

Individuals reporting more depressed mood felt more rejected by their partner compared to the previous measurement (women: $b = .25$, $p < .001$, men: $b = .24$, $p < .001$). Notably, partner effects revealed that women's depressed mood correlated with increases in men's feelings of being rejected ($b = .14$, $p < .001$), and men's depressed mood correlated with increases in women's feelings of being rejected ($b = .07$, $p = .016$). This suggests that when one partner was feeling more depressed, their partner reported feeling more rejected than in the previous assessment (see Table 3).

7.3.2 | Lagged associations

Depressed mood as predictor of feelings of being rejected
Individuals' depressed mood did not predict feelings of being rejected prospectively (women: $b = .02$, $p = .555$, men: $b = -.01$, $p = .824$). Similarly, the depressed mood of individuals did

TABLE 3 Associations between depressed mood and feeling rejected and treated badly.

Variable	Feeling rejected				Feeling treated badly			
	b	*SE*	95% CI (LL, UL)		*b*	*SE*	95% CI (LL, UL)	
Intercept women	.46***	0.14	0.19	0.73	.36**	0.13	0.11	0.61
Intercept men	−0.02	0.16	−0.33	0.30	−0.01	0.14	−0.29	0.27
Actor effects								
Womens depressed mood	.25***	0.04	0.18	0.32	.18***	0.03	0.12	0.24
Mens depressed mood	.24***	0.04	0.16	0.31	.23***	0.04	0.16	0.29
Womens previous perception	.09***	0.02	0.05	0.14	.10***	0.02	0.06	0.15
Mens previous perception	.09***	0.02	0.04	0.13	.05*	0.02	0.01	10
Partner effects								
Womens depressed mood	.14***	0.03	0.08	0.19	.14***	0.03	0.08	0.20
Mens depressed mood	.07**	0.03	0.01	0.12	.07*	0.03	0.01	0.13
Womens previous perception	0.01	0.02	−0.04	0.05	0.04	0.03	−0.01	0.09
Mens previous perception	0.03	0.02	−0.02	0.07	−0.00	0.02	−0.04	0.04
Actor effects								
Womens average depressed mood	.26***	0.05	0.16	0.36	.23***	0.05	0.13	0.32
Mens average depressed mood	.17*	0.06	0.06	0.28	.15*	0.05	0.06	0.25
Partner effects								
Womens average depressed mood	.12*	0.06	0.01	0.24	.15**	0.05	0.05	0.25
Mens average depressed mood	−0.07	0.05	−0.16	0.03	−0.03	0.05	−0.11	0.06
Control variables								
Age women	0.00	0.01	−0.01	0.01	0.00	0.01	−0.01	0.01
Age men	.02***	0.01	0.01	0.03	.02**	0.01	0.01	0.03
Relationship length women	−.03†	0.02	−0.07	0.00	−.04*	0.02	−0.07	−0.01
Relationship length men	−.05*	0.02	−0.09	−0.01	−.03†	0.02	−0.07	0.00
Marginal R^2	0.19				0.18			
Conditional R^2	0.38				0.42			

Note: $N = 72$ different-gender dyads. Age is a within person variable, relationship length is a between person variable.
Abbreviations: CI, confidence interval; LL, lower limit; UL, upper limit.
†$p < .10$;
*$p < .05$; **$p < .01$; ***$p < .001$.

not predict their partner's subsequent feelings of being rejected (women's depressed mood on men's feelings of being rejected: $b = −.01$, $p = .622$, men's depressed mood on women's feelings of being rejected: $b = −.02$, $p = .388$; see supplementary material, Table S4).

Feeling rejected as predictor of depressed mood

Feeling rejected by the partner did not predict an individual's depressed mood at the next time point (women: $b = .04$, $p = .319$, men: $b = .09$, $p = .067$). Similarly, it did not predict the

partner's depressed mood at the following time point (women feelings of being rejected on men's depressed mood: $b = .04$, $p = .333$, men's feelings of being rejected on women's depressed mood: $b = -.03$, $p = .495$; see supplementary material, Table S7).

7.4 | Being treated badly

7.4.1 | Concurrent change

Individuals who reported feeling more depressed perceived worse treatment from their partner as compared to the prior measurement (women: $b = .18$, $p < .001$, men: $b = .23$, $p < .001$). Additionally, partner effects were identified: women's depressed mood was associated with increases in men's feelings of being treated badly ($b = .14$, $p < .001$) and similarly men's depressed mood correlated with increases in women's feelings of being treated badly ($b = .07$, $p = .029$; see Table 3).

7.4.2 | Lagged associations

Depressed mood as predictor of feelings of being treated badly
Individuals' depressed mood did not predict feelings of being treated badly prospectively (women $b = .00$, $p = .869$; men: $b = -.02$, $p = .467$). Additionally, depressed mood did not predict the partner's subsequent feelings of being treated badly (women's depressed mood on men's feelings of being treated badly: $b = -.01$, $p = .713$, men's depressed mood on women's feelings of being treated badly: $b = -.02$, $p = .326$; see supplementary material, Table S4).

Feelings of being treated badly as predictor of depressed mood
When men reported worse treatment from their partners, they also reported higher levels of depressed mood at the next assessment ($b = .11$, $p = .023$). However, no such association was found for women ($b = .04$, $p = .393$). There were no significant partner effects: women's feelings of being treated badly did not predict men's depressed mood ($b = .03$, $p = .572$) and similarly men's feelings of being treated badly did not predict women's depressed mood in the following assessment ($b = -.03$, $p = .503$; see supplementary material, Table S8).

8 | DISCUSSION

We used a dyadic daily diary approach over 14 days to examine how romantic partners perceive each other's behaviors in daily interactions as a function of their own and their partner's depressed mood. There were two key findings. The first was that when individuals reported feeling more depressed, they perceived their partner's behavior more negatively *(distant, hurtful)*, *even* after controlling for their partners' self-reports of own distancing and hurtful behavior. Thus, more depressed mood can negatively bias one's perception of their partner's behavior, independent of the partner's self-reported behavior. This finding aligns with the *depression distortion hypothesis* (Bathina et al., 2021) and is consistent with research indicating that people with more depressive symptoms tend to overestimate their partner's negative behavior

(Overall & Hammond, 2013). Negative perceptions may worsen depressed mood, lead to conflict, and relationship dissatisfaction, creating a vicious cycle (Wichers, 2014).

Our study found that individuals reporting more depressed mood also reported feeling more rejected and treated worse. As we did not measure participants' *own* reports of rejection and treating the partner badly, it remains unclear, whether this association is due to biased perceptions or rather the partner's negative behaviors.

The second key finding was that depressed mood also influences the partners' perceptions and feelings. When men and women reported feeling more depressed, their partners perceived them as more distant, and they reported feeling treated worse and more rejected. Men also perceived more hurtful behavior when women felt more depressed. Romantic partners' negative relationship perception may increase the risk of depression contagion through maladaptive attributions, as suggested by the EASI model (van Kleef, 2009). Although attributions were not examined in this study, feelings of rejection may reflect romantic partners blaming their depressed partners for their distant behavior (e.g., "*my partner is withdrawn and distant because they don't care about me*"), rather than recognizing it as a symptom of their partner's depressed mood (e.g., "*my partner is more withdrawn because they feel depressed*"). Another potential explanation, consistent with the empirical literature, is that the depressed partner may truly behave in a more distant and rejecting manner (e.g., Du Rocher Schudlich et al., 2004; Rehman et al., 2008).

When we controlled for self-report of behavior, men still perceived women's behavior as more distant and hurtful, suggesting that men's perception seems to be biased by women's depressed mood. However, the association between men's depressed mood and women's perception of men's distant behavior became non-significant. This suggests that women's perception of distant behavior may be more strongly driven by accurate perception of men's self-reported distant behavior, rather than men's depressed mood, which aligns with studies suggesting that women may be more empathically accurate (Hodges et al., 2011; Klein & Hodges, 2001).

Depressed mood did not predict subsequent relationship perceptions in time-lagged associations. This differs from previous study findings that focused on long-term prospective associations (e.g., Barton et al., 2022; Morgan et al., 2018; Whisman & Uebelacker, 2009). Depressed mood fluctuates and may subside by the next assessed interaction (e.g., due to coping strategies or pleasant external events), thus no longer influencing an individual's perception of their partner's behavior. Another factor for the null findings may be that our sample was non-clinical, with only a minority exceeding the clinical cutoff for depression. For individuals with clinically elevated depression, depressed moods may be more likely to persist and continue to negatively impact couple interactions.

The directionality from relationship perceptions to depressed mood was inconclusive. While men's perception of women's hurtful behavior and feelings of being treated badly predicted more depressed mood at the next assessment, perception of distant behavior and feeling rejected did not. Thus, these findings should be interpreted with caution.

Taken together, our findings build on prior observational studies indicating that depressed mood may negatively affect couples' daily interaction. Depressed mood is linked not only to changes in one's own perception and feelings but also to those of the romantic partner. These findings support involving both partners in depression treatment, as recommended by multiple scholars (e.g., Barbato & D'Avanzo, 2020; Baucom et al., 2018; Whisman & Baucom, 2012). Couple-based treatment has been shown to effectively reduce depressive symptoms in both the partner with depression and their romantic partner (Baucom et al., 2018). Couples' perception

of each other in therapy provides valuable insights into their relationship dynamics. Clinicians may especially focus on helping couples identify and restructure harmful perceptions that may arise when they feel depressed, such as the ones discussed in our study—perceptions encompassing distant and hurtful behavior, feelings of rejection, and being treated badly. Moreover, they can provide guidance on how these negative thoughts can impact their relationship and further exacerbate their depressed mood.

In addition, couple-based treatment can help decrease distancing behavior and increase connectedness between romantic partners through interventions like engaging in joint pleasurable activities, increasing communication about thoughts and feelings, and reducing hurtful behavior by training communication skills (Baucom et al., 2020). Improving relationship functioning may be an efficient path to improved well-being for both partners.

8.1 | Limitations and future directions

This study has several limitations. First, we did not measure self-reports of treating the partner badly or rejection, thus we did not have a benchmark for these perceptions. Another limitation is the relatively high attrition rates, with only slightly more than half of the couples (56.9%) completing the entire 14-day assessment. Moreover, the sample consisted of different-gendered Caucasian couples, limiting generalizability to racial minorities and LGBTQIA+ individuals. Future research should include more diverse participants (e.g., varying sexual orientations, gender identities and cultural backgrounds).

Furthermore, the sample comprised primarily happy couples in newer relationships, limiting the generalizability of these findings to distressed and more established couples. Considering the close connection between low relationship satisfaction and negative behavior (Karney & Bradbury, 1995; Woodin, 2011), the display and perception of negative interaction behaviors may substantially intensify in distressed couples during depressive episodes. This warrants further research. Additionally, individuals with higher levels of relationship satisfaction may report fewer depressive symptoms (e.g., Barton et al., 2022).

Another factor that may have mitigated the strength of these findings is that the sample consisted of non-clinical participants with generally lower levels of depression. Research indicates that individuals with higher levels of depressive symptoms tend to exhibit a stronger negative interpretation bias (Lee et al., 2016). Therefore, in a clinical sample, the impact of depressed moods on partner interactions might be more pronounced. Moreover, summarizing the variables (distant and hurtful behavior, feelings of rejection, and being treated badly) into an overarching construct might have resulted in a more robust variable. However, we chose not to do this because these variables differ in content.

Lastly, many couples were not cohabiting, raising questions about the frequency of couples' interactions and whether remote versus in-person interactions differentially affect one's perception of partner behavior, as this aspect was not differentiated in this study. More research is needed here.

9 | CONCLUSION

The current study examined how depressed mood is associated with individuals' perceptions of their partner's behaviors in everyday life. We found that increased levels of depressed mood can

strain both partners, affecting how they perceive each other's behavior. This suggests that depressed mood impacts both partners' relational experience on a moment-to-moment basis, which presumably undermines intimacy and interpersonal adjustment, and possibly compromises supportive interactions. Important next steps would be to examine how negatively biased perceptions associated with depressed mood shape couples' actual behaviors using observational studies, and to identify partner characteristics that prevent negative mood from spreading in the relationship. Such insight would improve our understanding of the complex interconnection between depression and relational distress. It would also provide valuable guidance for refining clinical interventions for couples where one person is experiencing depression, and for individuals with depression who involve their partner in the treatment or support process.

CONFLICT OF INTEREST STATEMENT

DATA AVAILABILITY STATEMENT

The data and materials used in the research are available by emailing the corresponding author Tamara Luginbuehl: tamara.luginbuehl@stonybrook.edu.

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