


Maintaining Close Relationships: Gratitude as a Motivator and a Detector of Maintenance Behavior

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Abstract

This research examined the dual function of gratitude for relationship maintenance in close relationships. In a longitudinal study among married couples, the authors tested the dyadic effects of gratitude over three time points for approximately 4 years following marriage. They found that feelings of gratitude toward a partner stem from the partner's relationship maintenance behaviors, partly because such behaviors create the perception of responsiveness to one's needs. In turn, gratitude motivates partners to engage in relationship maintenance. Hence, the present model emphasizes that gratitude between close partners (a) *originates* from partners' relationship maintenance behaviors and the perception of a partner's responsiveness and (b) *promotes* a partner's reciprocal maintenance behaviors. Thus, the authors' findings add credence to their model, in that gratitude contributes to a reciprocal process of relationship maintenance, whereby each partner's maintenance behaviors, perceptions of responsiveness, and feelings of gratitude feed back on and influence the other's behaviors, perceptions, and feelings.

Keywords

close relationships, emotion in relationships, relationship cognition, well-being

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Let us be grateful to people who make us happy, they are the charming gardeners who make our souls blossom.

—Marcel Proust

The quote by Proust encourages people to be grateful to those who make them happy. According to a survey among British citizens commissioned by the BBC, people's biggest source of happiness is close relationships, including partners, family, and friends (BBC, 2005). Although the benefits of gratitude have been extensively investigated (cf. McCullough, Kimeldorf, & Cohen, 2008), we know surprisingly little about the functions of gratitude in close, ongoing relationships. Indeed, existing research mainly investigates gratitude in relationships among strangers or newly acquainted others (e.g., Algoe, Haidt, & Gable, 2008; Dunn & Schweitzer, 2005; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). The present work aims to fill this gap in our understanding of the social functions of gratitude by examining its functions in close relationships over time, focusing on gratitude experienced by, and toward, spouses.

The core premise of the present research is that the benefits of gratitude extend beyond initial interactions to ongoing relationships. Extending existing research showing that gratitude

among strangers motivates people to engage in costly prosocial behaviors (Bartlett & DeSteno, 2006), we propose that gratitude motivates prorelationship behavior toward partners in ongoing relationships. In these relationships too people receive benefits from being with their partners: Being with their partner allows people to satisfy the central and fundamental need to belong (e.g., Baumeister & Leary, 1995), and partners serve as a primary source of support, comfort, and intimacy (e.g., Reis & Shaver, 1988; Wieselquist, Rusbult, Foster, & Agnew, 1999). At the same time, close relationships are costly to individuals. To maintain close relationships people need to invest work and effort (Stafford & Canary, 1991) and to overcome selfish impulses for the good of the relationship (e.g., Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991). Hence, we propose that close relationships offer a context in which gratitude can arise and at the same time stimulate partners to engage in the often costly maintenance behaviors.

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Because gratitude is an inherently social emotion that results from others' positive or exemplary actions (Haidt, 2003; McCullough, Kilpatrick, Emmons, & Larson, 2001), and because perceived partner responsiveness and relationship maintenance behaviors are inherently relational phenomena (e.g., Reis & Shaver, 1988), we propose that the effects of gratitude have dyadic consequences in that one partner's efforts to maintain the relationship should elicit feelings of gratitude in the other partner. Thus, we propose a dyadic model of gratitude in close relationships whereby gratitude serves a dual function: detecting partner responsiveness and motivating maintenance behavior. We test this model in a prospective, longitudinal study among a large sample of newlywed couples. The present research thereby extends previous research, which showed that the experience of gratitude affects the benefactor's behavior toward strangers (e.g., Bartlett & DeSteno, 2006) by examining gratitude's effects on behavior toward specific, close relationship partners.

The Dual Function of Gratitude in Close Relationships

Gratitude is a positive feeling that beneficiaries experience toward their benefactor. People feel grateful when they benefit from costly, intentional, and voluntary actions or efforts of a benefactor that are valuable to them (McCullough et al., 2001; Tesser, Gatewood, & Driver, 1968). It is an other-praising emotion, which involves different components, including the cognitive appraisal that the other did good deeds for the self, a sense of appreciation for the other, and the motivation or action tendency to repay the other (Algoe & Haidt, 2009; Lambert, Graham, & Fincham, 2009). The literature distinguishes between *benefit-triggered* and *generalized* gratitude (Lambert et al., 2009). Benefit-triggered gratitude is elicited by a specific transfer of a benefit, whereas generalized gratitude includes being grateful for that which is valuable and meaningful to oneself. In close relationships benefits are given noncontingently to a partner's needs (Clark & Mills, 1979). Consequently, the present research considers the generalized type of gratitude and applies it to marital partners. Thus, unlike existing research (e.g., Bartlett & DeSteno, 2006), we examine gratitude's effects on specific partners, spouses. We consider gratitude as a partner-praising emotion, akin to appreciation (Adler & Fagley, 2005): a positive emotional connection to the partner, which is not triggered by a specific benefit but by the acknowledgment and appreciation of a partner's value to the self.

Gratitude not only serves as a detector that alerts people that they have benefited from prosocial behavior (McCullough et al., 2001) but also serves as a motivator for beneficiaries to engage in prosocial behavior after having received benefits from others (Bartlett & DeSteno, 2006; for a review see McCullough et al., 2008). This dual function of gratitude is proposed to serve the promotion of relationships with

responsive others. Algoe and colleagues (2008) provide compelling evidence for this suggestion in an ingenious study among sorority sisters. Using the naturally occurring gratitude intervention in sororities, a gift-giving week, the researchers examined relationship formation between new sisters (gift receivers) and senior sisters (gift givers). Confirming the detection function of gratitude, new sisters experienced more gratitude the more they rated the gift as thoughtful. Although the authors did not examine the motivational function of gratitude, they found that gratitude had effects for the relationship between benefactors and beneficiaries. New sisters' gratitude after the gift giving predicted the relationship quality of both new and senior sisters at a 1-month follow-up. Hence, even an incidental act of gift giving can inspire enough gratitude to facilitate relationship formation between strangers.

Extending these findings to close relationships, we propose that gratitude emerges when people perceive that their partner engages in costly relationship maintenance behavior and that this behavior is responsive to their needs. These suggestions are consistent with the finding that gratitude arises as a response to unselfish rather than selfish intentions (Tsang, 2006). Importantly, we suggest that these feelings of gratitude motivate people to engage in the costly maintenance behaviors themselves. These efforts at maintaining the relationship, in turn, benefit their partner, who should experience gratitude upon detecting that people engage in efforts to maintain the relationship (Figure 1 presents a schematic presentation of our model). Thus, we propose that gratitude serves a dual function in close relationships that facilitates relationship maintenance.

Gratitude as a detector of perceived partner responsiveness. Gratitude is conceptualized as a positive emotion that is relevant to the processing of and responding to prosocial behavior (McCullough et al., 2008). To examine the role of gratitude in close relationships, research has utilized the concept of responsiveness (Algoe et al., 2008). Partner responsiveness occurs when people feel that a partner addresses their needs, wishes, or actions (Reis, Clark, & Holmes, 2004). By being responsive, partners communicate understanding, acceptance, and caring to each other. Being responsive thereby is crucial for processes that are at the heart of close relationships, including trust, commitment, and intimacy (Laurenceau, Feldman Barrett, & Pietromonaco, 1998; Reis et al., 2004). Although Algoe et al. (2008) found that the extent to which new sorority sisters appraised their gift as thoughtful determined their gratitude, it remains unclear whether gratitude can result from perceived partner responsiveness in close, ongoing relationships. In contrast to relationships between strangers, close relationships are less exchange oriented (Clark & Mills, 1979), and partners do not, or at least much less, keep track of the giving and receiving of benefits. Nevertheless, we propose that also in the context of close relationships gratitude serves as a detector of partners' unselfish intentions, responsiveness, and efforts

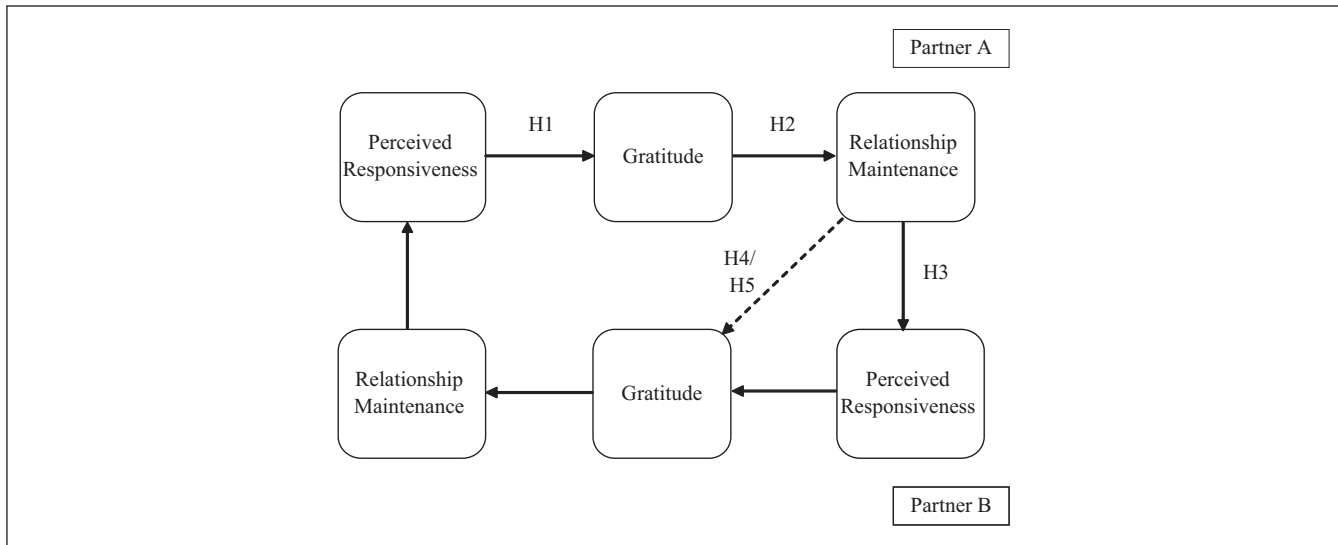


Figure 1. A dyadic model of the dual function of gratitude in close relationships: Gratitude as a motivator and a detector of relationship maintenance behavior

The figure illustrates model variables and hypotheses (H1–H5 = Hypotheses 1–5).

at maintaining the relationship. We suggest that effortful relationship maintenance behavior is diagnostic of a pro-relationship orientation (Wieselquist et al., 1999) and provides unambiguous evidence that the partner cares for and values the self. To illustrate, Marieke should feel particularly grateful toward Jan when she perceives that Jan tries to include her family and friends in their activities, because he knows that they are important to her. Thus, even in close relationships perceived partner responsiveness should be associated with gratitude.

Gratitude as a motivator of relationship maintenance behavior. The emotional qualities of gratitude also shape people's motivations and goals. Gratitude motivates people to engage in prosocial behavior toward others in general (Bartlett & DeSteno, 2006). Again, it remains unclear whether gratitude may motivate prosocial behavior in close relationships in which partners do not keep track of their exchanges but are motivated to be responsive to the other person's needs (Clark & Mills, 1979). We propose that in close relationships too, gratitude should motivate people to act prosocially and engage in efforts to maintain their relationship even at costs to the self. Abundant research shows that partners engage in relationship maintenance behaviors to sustain desired relationships (e.g., Badr & Carmack Taylor, 2008; Canary, Stafford, & Semic, 2002; Finkel & Campbell, 2001). Relationship maintenance behavior comprises a variety of different strategies, ranging from habitual, routine behaviors (e.g., taking out the garbage on Tuesdays; Dainton & Stafford, 1993) to strategic and effortful behavior (e.g., engaging in constructive responses when the partner is destructive—Finkel & Campbell, 2001; performing one's responsibilities—Dainton & Stafford, 1993). Thus, we propose that in the context of close relationships gratitude

serves as a motivator for people's effortful maintenance behavior.

Moreover, given that maintaining one's relationships is a task that remains important over the whole course of a relationship, we propose that gratitude remains beneficial as relationships progress over time. In fact, a true test of whether gratitude helps spouses in maintaining their marriages lies in showing that the effects of gratitude hold as time passes. After all most people enter marriages being extremely optimistic and happy, but a considerable percentage of marriages end in divorce, and research shows that over the course of marriages marital satisfaction steadily declines (Vaillant & Vaillant, 1993). The present research examines the dual function of gratitude both cross-sectionally and longitudinally, thereby examining whether the dyadic model of gratitude remains important over the course of marital relationships and whether the dual function of gratitude predicts relationship maintenance over time.

Dyadic effects of gratitude. Through its effect on relationship maintenance, gratitude is likely to affect both partners in a relationship. Indeed, Grant and Gino (2010) examined how the expression of gratitude by one person affected helpers' prosocial behavior. In a series of experimental and field studies, they consistently found that the expression of thanks affected a variety of helper behaviors, including providing assistance for a second time and making phone calls for fund-raisers. Importantly, they found that when helpers were thanked for their efforts, they felt socially valued and, in turn, engaged in more helping behavior. These findings show that feeling cared about and valued by others may elicit gratitude and prosocial behavior.

Extending these findings to marital relationships, we predict that people's efforts in maintaining their relationships do

not go unnoticed by their partners. Rather, partners detect these efforts, which communicate that the other cares for and values the relationship and the self. To illustrate, when Marieke perceives that Jan does his chores in the household, she feels that he cares for and values her and that he is responsive to her needs. Consequently, she experiences gratitude, which motivates her to engage in similar efforts to maintain the valued relationship with Jan.

Overview of the Present Research

Testing the dyadic model of gratitude. The dyadic model of gratitude in close relationships predicts that when Partner A perceives Partner B to be responsive to his/her needs, he/she experiences gratitude (Hypothesis 1). Partner A's gratitude, in turn, motivates him/her to invest more efforts in maintaining his/her relationship with Partner B (Hypothesis 2). Moreover, we predict that Partner A's maintenance behavior is noticed by Partner B, who feels cared about and valued by Partner A. Consequently, Partner B should perceive that Partner A is responsive to his/her needs (Hypothesis 3) and should feel grateful (Hypothesis 4). In addition to this direct effect of Partner A's maintenance behavior on Partner B's gratitude, we predict an indirect effect of Partner A's maintenance behavior on Partner B's gratitude via Partner B's perception that Partner A is responsive to Partner B's needs (Hypothesis 5). The experience of gratitude should then motivate Partner B to engage in more maintenance behavior (cf. Hypothesis 2).

Figure 1 presents a schematic representation of our model. We tested our model in a large sample of newlywed couples in which we obtained data from both partners at three data collections. We tested whether the predicted dual function of gratitude as a detector and motivator of relationship maintenance holds across different stages of the early years of marriage. To this end, we test the validity of our model within each of the three different time points. In addition, we tested whether the longitudinal effects were present across time.

Given the dyadic nature of our model, some predictions involve intrapersonal associations (Hypotheses 1 and 2) and others interpersonal associations (Hypotheses 3, 4, and 5). For the longitudinal test, we extended these hypotheses over time. For example, for the intrapersonal path we predicted that when Partner A perceives Partner B to be responsive to her needs at an earlier time point, she should experience relatively higher levels of gratitude at a later time point (Hypothesis 1a). Partner A's gratitude at an earlier time point, in turn, should motivate her to invest more efforts in maintaining her relationship with Partner B at a later time point, resulting in relatively higher levels of maintenance of Partner B (Hypothesis 2a). Similarly, for the interpersonal pathway, we predicted that if Partner A engages in relationship maintenance, Partner B should perceive that Partner A is responsive to his needs at later time point (Hypothesis 3a) and should feel grateful at a later time point (Hypothesis 4a).

We did not anticipate meaningful sex differences in the strength of association among variables. We therefore refer to "Partner A" and "Partner B" and do not distinguish between partners in our hypotheses.

Testing alternative hypotheses. To test the validity of our model, we took two measures. First, we performed all analyses controlling for relationship satisfaction, relationship duration, and communal orientation. Relationship maintenance is conducive to relationship satisfaction (Stafford & Canary, 1991), which may have a positive relation with all our model variables. To diminish the possibility that gratitude is an artifact of positive feelings toward the partner, we controlled for relationship satisfaction when examining our model.

Relationship duration allows us to test whether gratitude carries relational meaning after the establishment of reciprocal relationships. In light of the existing literature (McCullough et al., 2008), one could argue that gratitude is especially important in the beginning of a relationship. Over time, it may become less important. As couples build their relationship, other variables, such as investments (Rusbult, 1983), may become more important determinants of relationship maintenance. Hence, we wanted to make sure that gratitude benefits relationships of differing length.

Furthermore, we controlled for partners' communal orientation in our model (Clark & Mills, 1979). One could argue that gratitude to one's partner may be unnecessary because communal relationships already feature a high level of partners giving and receiving benefits from each other (McCullough et al., 2008). However, our model assumes that gratitude is a response to the perception that one's needs are met in the relationship and hence that it should be valued in the communal relationships as well (see also Algoe, Gable, & Maisel, 2010). Recent research shows that expressing gratitude increases expressers' perception of communal strength of the relationship (Lambert, Clark, Durtschi, Fincham, & Graham, 2010). In addition, research shows that communal orientation is related to people's responsiveness toward the partner (Clark, Dubash, & Mills, 1998) as well as their willingness to express emotions (Clark & Finkel, 2005). Even though the present research tests the experience and not the expression of gratitude, we wanted to control for the possibility that gratitude exerts its benefits above and beyond partners' communal orientation.

Second, we explicitly tested alternative causal arrangements of our data in the longitudinal cross-lagged panel models (conducted per pair of variables). In these models, which offer a very strict test of longitudinal effects (Kline, 2005), the hypothesized actor and partner effects were estimated while estimating and taking into account concurrent associations, temporal stability of both variables, and the existence of reverse longitudinal effects. For instance, the hypothesized effect of gratitude on maintenance was simultaneously estimated with and controlled for the effect of maintenance on gratitude. Comparison of the hypothesized and reverse effects in these models indicates whether the hypothesized or reverse explanation is more likely.

Method

Participants

We used data from three time points of a longitudinal project designed to measure different aspects of marital functioning. At Time 1 our sample included 195 newlywed couples. The mean age of husbands was 32.07 years ($SD = 4.86$), and the mean age of wives was 29.20 years ($SD = 4.28$). Couples had been romantically involved on average for 5.77 years ($SD = 3.07$) and had been living together for an average of 3.81 years ($SD = 2.31$). Nearly all couples were Dutch (98.5% of the husbands and 96.4% of the wives).

At Time 2 data collection, 190 couples remained (97% of the original sample), whereas at Time 3 data collection 157 couples remained (75% of the original sample). To estimate the pattern of missing values, we conducted Little's (1988) Missing Completely at Random test. Although this very stringent test was significant ($\chi^2 = 24.053$, $df = 13$, $p = .031$), the χ^2/df ratio of 1.10 indicated a good fit between sample scores with and without imputation (Bollen, 1989). Therefore, we used full information maximum likelihood (Enders & Bandalos, 2001) to estimate our models in Mplus (Muthén & Muthén, 2006).

Procedure

Participants were recruited via the municipalities in which they got married. Each month eight Dutch municipalities of moderate to large cities in the Netherlands provided the names and addresses of all couples who had gotten married in the previous month. The municipalities were in average-sized Dutch cities mostly in the south of the country. The present data come from a larger set of a longitudinal panel study, which started in September 2006. The present data were gathered about 9 months later (i.e., about 10 months after the couples got married). For all the couples in the study, we verified that (a) this was the couple's first marriage, (b) the couples had no children prior to the marriage, and (c) the partners were between 25 and 40 years old.

Both members of the couple separately filled out an extensive questionnaire at home in the presence of a trained interviewer. The presence of the interviewer ensured that partners independently completed the questionnaires without consulting each other. The questionnaire took about 90 minutes to complete. For their participation, the couples received €15 and a pen set. To increase participants' commitment to the study, we sent birthday cards to each participant. Also, participants were able to get updates about the progress of the study via the study website. This procedure was repeated approximately 12 months later for Time 2 and another 12 months later for Time 3. Thus, the present study covers a period of about 2 years and 9 months after the couples got married.

Measures

Gratitude. We assessed gratitude using a four-item questionnaire adapted from work by McCullough, Emmons, and Tsang (2002). Partners rated the extent to which they felt grateful to each other (e.g., "If I were to make a list of everything I am grateful for to my wife (husband), it would be a very long list"). The items were rated on a 5-point scale (1 = *not at all*, 5 = *very much*). Responses were averaged to yield a gratitude score; higher values indicated greater gratitude (Cronbach's $\alpha = .78$ for husbands and $.80$ for wives).

Perceived partner responsiveness. An 18-item questionnaire was used to assess partner responsiveness (conceptually modeled consistently with the work of Reis & Shaver, 1988). Partners rated the degree to which they felt their wife (husband) accepts them (e.g., "My wife (husband) values and respects me"), understands them (e.g., "My wife (husband) fully understands me"), and cares for them (e.g., "My wife (husband) tries to fulfill my needs"). The items were rated on a 5-point scale (1 = *not at all*, 5 = *very much*). Responses were averaged to yield a responsiveness score; higher values indicated greater responsiveness (Cronbach's $\alpha = .94$ for husbands and $.93$ for wives).

Relationship maintenance. To assess relationship maintenance behaviors, this study used the strategic and routine maintenance behaviors measure by Dainton and Stafford (1993). From the original list, we selected 15, mostly strategic behaviors that are conscious and intentionally enacted for the purpose of sustaining the relationship and can be considered effortful in that they describe behavior that indicates a departure from self-interest for the benefit of the relationship (e.g., "I encourage my wife (husband) to share her feelings with me"; "I offer to do things that aren't 'my' responsibility"). Partners indicated whether they engaged in a specific behavior with their wives (husbands) over the course of a previous week (e.g., "Did you stress your commitment to your wife over the past week?" "Did you try to solve a conflict together with your wife over the past week?"; 1 = *no*, 2 = *yes*). Responses were summed up to create a relationship maintenance score; higher values indicated greater relationship maintenance.

Relationship satisfaction. We measured relationship satisfaction using the Dyadic Adjustment Scale (Spanier, 1976). The scale taps components of couple functioning such as agreement regarding important values conflict management and expressions of love and affection (e.g., "Do you confide in your partner?"; 0 = *never*, 5 = *all the time*; Cronbach's $\alpha = .80$ for men and $.81$ for wives). Responses were summed to create a relationship satisfaction score; higher values indicated greater relationship satisfaction.

Relationship duration. Participants reported the length of their relationship in months at the time of the first assessment (Time 1).

Communal orientation. Participants completed a shortened version of the Communal Orientation Questionnaire

Table 1. Means, Standard Deviations, and Correlations for All the Assessed Variables, Times 1–3

Variable	M	SD	Correlation coefficients				
			1	2	3	4	5
Time 1							
1. Gratitude	4.10	0.54	.16**	.17**	.22**	.21**	.04
2. Perceived responsiveness	4.22	0.42	.50**	.28**	.14**	.27**	.14**
3. Maintenance behavior	17.84	2.18	.26**	.22**	.27**	.07	.08
4. Relationship satisfaction	111.14	10.42	.43**	.55**	.21**	.31**	.09
5. Relationship duration	5.77	3.07	.04	.14**	.08	.09	—
Time 2							
1. Gratitude	4.06	0.58	.24**	.26**	.23**	.24*	
2. Perceived responsiveness	4.16	0.45	.58*	.38**	.16**	.32**	
3. Maintenance behavior	17.13	2.18	.31*	.22**	.21**	.12*	
4. Relationship satisfaction	110.53	10.42	.54**	.63**	.12*	.42**	
Time 3							
1. Gratitude	4.09	0.59	.15**	.27**	.11*	.22**	
2. Perceived responsiveness	4.13	0.48	.57**	.30**	.20**	.24**	
3. Maintenance behavior	17.09	2.53	.36**	.20**	.24**	.11*	
4. Relationship satisfaction	109.93	11.40	.52**	.61**	.30*	.30**	

The correlations on and above the diagonal (in bold) are cross-partner correlations between model variables. The correlations below the diagonal are within-individual correlations.

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

by Clark, Ouellette, Powell, and Milberg (1987). The items measured communal orientation on a 5-point scale (e.g., “When making a decision, I take other people’s needs and feelings into account”; 0 = *not at all*, 5 = *very much*; Cronbach’s $\alpha = .66$ for husbands and $.60$ for wives).

Results and Discussion

Analytic Strategy

To analyze the cross-sectional data at T1, we used regression analyses in SPSS. In addition, initial analyses included gender as a lower level variable; less than 4% of the gender effects were significant, so we dropped this variable from the analyses. The means and standard deviations as well as within-individual and cross-partner correlations are presented in Table 1.

The longitudinal models were conducted per pair of variables to ensure sufficient statistical power for the model (Kline, 2005). With distinguishable partners of a dyad (in the case of husbands and wives, partners are distinguished by their gender), we were able to use traditional structural equation modeling procedures for estimating and identifying of models and assessing model fit (Olsen & Kenny, 2006). More specifically, we used actor partner interdependence modeling (APIM), a specific type of cross-lagged panel analyses (Kenny, 1996). Hence, for Hypothesis 1, we ran an APIM for males’ and females’ gratitude and responsiveness (see Figure 2). This procedure was repeated for each pair of variables. We ran two follow-up tests on each model. First, we tested whether the effects were time variant or

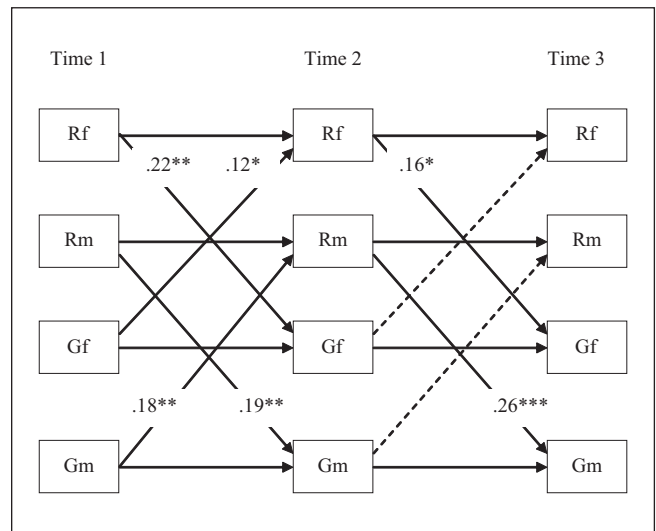


Figure 2. Cross-Lagged actor partner interdependence modeling-based analyses of responsiveness (R) and gratitude (G). The subscript *f* indicates wives and subscript *m* indicates husbands, including all Time 1, Time 2, and Time 3 cross-lagged within- and between-partner effects. Only significant effects are shown. * $p < .05$. ** $p < .01$. *** $p < .001$.

invariant by constraining the cross-lagged effects to be equal for the T1–T2 and T2–T3 intervals. A nonsignificant change in chi-square model fit after constraining the effects to be equal over time would indicate that parameters were time invariant, and the more parsimonious time invariant model was chosen. Second, we tested whether the cross-lagged effects were similar or different for husbands and wives. therefore,

we compared a constrained model with parameters being set equal for husbands and wives against a model in which these parameters were not constrained. A significantly poorer fit of the constrained model (i.e., higher chi-square value) would indicate gender differences. Hence, with a nonsignificant chi-square increase, the more parsimonious gender invariant model was chosen.

For both the cross-sectional and the longitudinal models, the analyses concerning Hypotheses 1 and 2 involved the intrapersonal pathway, whereas Hypotheses 3 to 5 concerned analyses regarding the interpersonal pathway.

Predicting Key Model Variables Cross-Sectionally

To test Hypothesis 1 using cross-sectional data, the signaling function of gratitude, we regressed Partner A's perception of Partner B's responsiveness onto Partner A's gratitude. Consistent with our hypothesis, Partner A's perception of B's responsiveness was significantly associated with Partner A's gratitude at each of the time points ($Bs = .52, .49, .50, ps < .01$, for Times 1, 2, and 3, respectively). To test the role of gratitude as a motivator of relationship maintenance, we regressed Partner A's gratitude onto Partner A's report of Partner A's maintenance behavior. Consistent with Hypothesis 2, Partner A's gratitude was significantly associated with his or her maintenance behaviors ($B = .23, p < .01$). To test the dyadic role of gratitude as a detector of relationship maintenance, we regressed Partner A's maintenance onto Partner B's perception of Partner A's responsiveness. As predicted by Hypothesis 3, Partner A's maintenance behavior was significantly associated with Partner B's perception of Partner A's responsiveness ($Bs = .10, .09, .08, ps < .05$, for Times 1, 2, and 3, respectively). Finally, to test Hypothesis 4 we regressed Partner A's maintenance behavior onto Partner B's gratitude. As predicted, Partner A's maintenance behavior was significantly associated with Partner B's gratitude ($Bs = .14, .12, .12, ps < .01$ for Times 1, 2, and 3, respectively). The dyadic model of gratitude held within each of the time points for both the intrapersonal and the interpersonal effects.

Taken together our results confirm the dual function of gratitude as a detector and motivator of relationship maintenance behavior. For each of the three time points, we found support for the dyadic model of gratitude, finding that gratitude acted as a detector of relationship maintenance and that gratitude acted as a motivator of relationship maintenance within the individual and also for the partner.

Mediation Analyses

To test whether perceived partner responsiveness mediates the link between Partner A's maintenance behavior and Partner B's gratitude (Hypothesis 5), we performed a mediation analysis (Baron & Kenny, 1986; Kenny, Kashy, &

Bolger, 1998). Consistent with the model displayed in Figure 1, Sobel's test confirmed that Partner A's maintenance behavior resulted in Partner B's gratitude partly because it fostered Partner B's perception that Partner A is responsive to his or her needs at all the three time points ($zs = 1.96, 1.97, \text{ and } 1.96$ for Times 1–3, respectively, $p < .05$). This was furthermore confirmed by bootstrapping this indirect effect 5,000 times in Mplus ($\beta s = .08, .09, .12, zs = 2.796, 3.029, 2.992, ps < .01$).¹

Controlling for Relationship Satisfaction, Relationship Duration, and Communal Orientation

To test the validity of our model, we tested whether it held above and beyond relationship satisfaction, duration, and communal orientation (see Tables 2, 3, and 4). To this end, we first performed all analyses on the key model variables and the mediation analysis including relationship satisfaction, using the Dyadic Adjustment Scale. The analyses included both the main effect of relationship satisfaction and the interaction between satisfaction and model predictors.

We first analyzed the data from Time 1. All key model predictors remained significant, even though relationship satisfaction showed a significant and positive relation with the model variables. However, no interaction effects were found. Table 2 presents the results when controlling for relationship satisfaction at Time 1 (of Partner A, and of Partner B for Hypotheses 3 and 4). The results at Times 2 and 3 were similar. Specifically, Partner A's satisfaction is related to A's gratitude ($B = .20, p < .01$) and A's relationship maintenance ($B = .12, p < .01$), as well as Partner B's perception of Partner A's responsiveness ($B = .23, p < .01$) and Partner B's gratitude ($B = .21, p < .01$). Also, Partner B's satisfaction contributes to his or her own perception of Partner A's responsiveness ($B = .63, p < .01$) and his or her own gratitude ($B = .47, p < .01$).

In addition, we tested Hypothesis 5 by including Partner A's and Partner B's relationship satisfaction in our analyses. Again, the results remained largely unchanged. Partner B's responsiveness partly mediated the relation between Partner A's maintenance behavior and Partner B's gratitude, when controlling for Partner A's relationship satisfaction, $z = 1.95, p = .05$ (5,000-bootstrap $z = 1.95, p = .05$). When controlling for Partner B's relationship satisfaction, again the mediation was partial but significant, $z = 2.35, p < .02$ (bootstrap $z = 2.21, p = .03$). Analogical analyses for Times 2 and 3 revealed the same pattern of results. Taken together, the results support our claim that gratitude facilitates relationship maintenance behaviors above and beyond relationship satisfaction. Thus, even 4 years into the marriage (i.e., approximately at the point of Time 3 data collection) gratitude benefited relationships of couples with differing levels of relationship satisfaction.

Table 2. Hypotheses 1 to 4 (Time 1): Regression Analyses Results for Model Variables, Controlling for Relationship Satisfaction

Variable	Regression analyses	
	B	t
Hypothesis 1: A's perception of B's responsiveness → A's gratitude		
A's gratitude		
A's perception of B's responsiveness	.41**	7.53
Satisfaction	.20**	3.54
Hypothesis 2: A's gratitude → A's relationship maintenance		
A's relationship maintenance		
A's gratitude	.18**	3.30
Satisfaction	.12*	2.16
Hypothesis 3: A's relationship maintenance → B's perception of A's responsiveness		
B's perception of A's responsiveness		
A's relationship maintenance (with A's satisfaction)	.10*	2.11
A's relationship maintenance (with B's satisfaction)	.10*	2.49
B's satisfaction	.63**	14.78
A's satisfaction	.23**	4.61
Hypothesis 4: A's relationship maintenance → B's gratitude		
B's gratitude		
A's relationship maintenance (with A's satisfaction)	.15**	3.04
A's relationship maintenance (with B's satisfaction)	.16**	3.49
A's satisfaction	.21**	4.35
B's satisfaction	.47**	10.35

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

Second, we conducted the analyses controlling for relationship duration and the interaction between relationship duration and model predictors. Again, our model remained largely unchanged, and duration did not emerge as a significant predictor in any of the analyses (all $ps > .10$), except for the analyses testing Hypothesis 3. None of the interaction effects were significant. When including relationship duration, Partner A's relationship maintenance became a marginally significant predictor of Partner B's perception of Partner A's responsiveness ($B = .10, p = .05$), whereas relationship duration was a significant predictor ($B = .04, p < .04$). This finding suggests that the longer the duration of the marriage, the more spouses perceived responsiveness in each other, independent of their actual maintenance behaviors. We found no significant interactions between relationship duration and model predictors in any of our analyses. In addition, we tested Hypothesis 5 by including relationship duration in our analyses; the results remained largely unchanged (the test of partial mediation by Partner B's responsiveness was marginally significant, $z = 1.92, p < .06$). Table 3 presents the results of the regression analyses for model variables, when controlling for relationship duration using data from Time 1 (the results did not vary across Time 2 and 3). All in all, we found that gratitude benefitted relationships of differing length equally.

Third, we conducted the analyses controlling for communal orientation and the interaction with model predictors. Again, our model remained unchanged, and communal

orientation did not emerge as a significant predictor in any of the analyses (all $ps > .10$). We found no significant interactions between communal orientation and model predictors in any of our analyses. In addition, we retested Hypothesis 5, and the results remained unchanged (the test of partial mediation by Partner B's responsiveness was marginally significant, $z = 1.92, p < .06$). Table 4 presents the results of the regression analyses for model variables when controlling for communal orientation. Again, the results were similar at Time 2 and Time 3. Overall, we found that gratitude benefitted relationship partners of differing communal orientation equally.

Testing the Model Longitudinally

To test whether the hypothesized effects also held longitudinally, and to test whether alternative causal arrangement could explain our findings, we used a specific type of cross-lagged panel modeling on the longitudinal data. We first tested Hypothesis 1 whereby perceived partner responsiveness should be longitudinally predictive of gratitude. The model, consisting of husbands' and wives' repeated measures for responsiveness and gratitude, was first tested and found to be gender invariant ($\Delta\chi^2 = 2.46, df = 2, p = .29$) and time invariant ($\Delta\chi^2 = 5.96, df = 4, p = .21$). Figure 2 shows that responsiveness was positively predictive of gratitude for both time intervals. In addition, we found the reverse effect whereby gratitude predicted perceived partner responsiveness

Table 3. Hypotheses 1 to 4 (Time 1): Regression Analyses Results for Model Variables, Controlling for Relationship Duration

Variable	Regression analyses	
	B	t
Hypothesis 1: A's perception of B's responsiveness → A's gratitude		
A's gratitude		
A's perception of B's responsiveness	.53**	11.92
Hypothesis 2: A's gratitude → A's relationship maintenance		
A's relationship maintenance		
A's gratitude	.22**	4.47
Hypothesis 3: A's relationship maintenance → B's perception of A's responsiveness		
B's perception of A's responsiveness		
A's relationship maintenance	.10 [†]	1.94
Relationship duration	.04*	2.33
Hypothesis 4: A's relationship maintenance → B's gratitude		
B's gratitude		
A's relationship maintenance	.14**	2.69

† $p = .05$. * $p < .05$. ** $p < .01$.

Table 4. Hypotheses 1 to 4, Time 1: Regression Analyses Results for Model Variables, Controlling for Communal Orientation

Variable	Regression analyses	
	B	t
Hypothesis 1: A's perception of B's responsiveness → A's gratitude		
A's gratitude		
A's perception of B's responsiveness	.42**	8.37
Hypothesis 2: A's gratitude → A's relationship maintenance		
A's relationship maintenance		
A's gratitude	.242**	4.18
Hypothesis 3: A's relationship maintenance → B's perception of A's responsiveness		
B's perception of A's responsiveness		
A's relationship maintenance	.04 [†]	1.22
Hypothesis 4: A's relationship maintenance → B's gratitude		
B's gratitude		
A's relationship maintenance	.14**	3.48

† $p = .05$. * $p < .05$. ** $p < .01$.

over time. Comparing the two models showed that the effect size of the predicted path was significantly stronger than that of the reverse path, however ($\Delta\chi^2 = 10.71$, $df = 1$, $p < .001$), and that the reverse paths did not take away the hypothesized effect. Thus, in line with our hypothesis, higher levels of perceived partner responsiveness predicted higher levels of gratitude 1 year later.

Next, we tested Hypothesis 2 whereby the experience of gratitude should motivate the self to engage in relationship maintenance. Again, the model was gender invariant ($\Delta\chi^2 = 1.00$, $df = 2$, $p = .61$) and time invariant ($\Delta\chi^2 = 3.49$, $df = 4$, $p = .49$). Figure 3 shows that, as hypothesized, more gratitude at T predicted more relationship maintenance at T+1. In addition, however, we also found the reverse effect whereby relationship maintenance predicted gratitude over time. The

effect size of the predicted path was significantly stronger than that of the reverse path, however ($\Delta\chi^2 = 6.82$, $df = 1$, $p < .001$). Hence, consistent with Hypothesis 2, gratitude predicted more relationship maintenance over time, even when controlling for temporal stability, for concurrent associations, and for reverse effects of maintenance on gratitude.

Taken together, these results confirm that the intrapersonal pathways of the dyadic model of gratitude hold over time: Perceived partner responsiveness experienced at an earlier time point predicted gratitude at a later time point. In turn, gratitude experienced at an earlier time point predicted relationship maintenance behavior at a later time point. Moreover, although the reverse directional effects were also significant, our analyses showed that the effects of the predicted pathways were significantly stronger than those of the

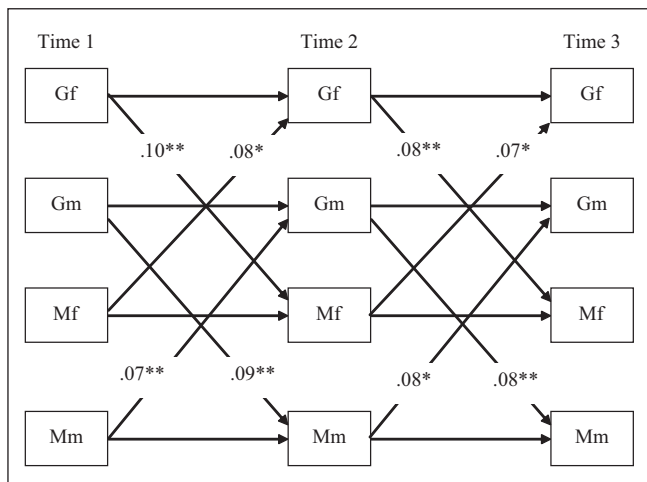


Figure 3. Cross-lagged actor partner interdependence modeling-based analyses of gratitude (G) and relationship maintenance (M). The subscript *f* indicates wives and subscript *m* indicates husbands, including all Time 1, Time 2, and Time 3 cross-lagged within- and between-partner effects. Only significant effects are shown. **p* < .05. ***p* < .01. ****p* < .001.

reverse pathways. Next, we tested Hypotheses 3 to 5. The analyses failed to yield the predicted interpersonal effects across all the time points.

General Discussion

The present research provides a novel look at the role of gratitude in ongoing relationships and relationship maintenance. In line with previous research (Algoe et al., 2008), we found gratitude is a signal for perceived partner responsiveness and a motivator for relationship maintenance behaviors. Extending existing research, we found that this dual function applied to partners in ongoing relationships. In addition, we showed that it had both interpersonal and intrapersonal effects: Partner A’s maintenance behavior is perceived by Partner B as a signal of Partner A’s responsiveness to Partner B’s needs. Moreover, we found that gratitude functions as a detector of relationship maintenance, partly because Partner B perceives Partner A to be responsive to his or her needs. The dyadic model held at three time points separated by intervals of about 1 year. Thus, even 4 years into marriage not only does the experience of gratitude motivate the self to maintain the relationship but also these relationship maintenance behaviors are noticed by the partner who perceives the self to be responsive to his or her needs, and in turn experiences gratitude. Although we found good support for the intrapersonal functions of gratitude, the longitudinal analyses failed to confirm the dyadic effects of gratitude (H3–H5).

Our results remained largely unchanged when controlling for relationship satisfaction, duration, and communal orientation. These findings suggest that the relational

effects of gratitude are not an artifact of general relationship satisfaction and function for relationship partners differing in communal orientation. Rather, gratitude seems to be an other-praising emotion, which functions distinctively different from other positive emotions and feelings such as happiness or satisfaction (Algoe & Haidt, 2009). Nevertheless, other variables should be considered to confirm the unique contribution of gratitude to the maintenance of ongoing, close relationships. To illustrate, future research should consider other potential indicators of maintenance, such as attribution biases (Bradbury & Fincham, 1990) or trait responsiveness, to provide further evidence for the unique role of gratitude in relationship maintenance.

In addition, the intrapersonal pathways of the dyadic model of gratitude held longitudinally (even when controlling for concurrent associations, temporal stability, and reverse causal arrangements) and were gender and time invariant. Reverse effects were also found but were less strong than the hypothesized effects. Thus, this suggests that the benefits of gratitude are experienced equally by both wives and husbands and remain equally important even at later stages of marital relationships. As a result, contrary to suggestions in the literature (McCullough et al., 2008), our research demonstrates that gratitude may benefit relationships beyond the initial reciprocal stages of development, thereby underlining the important role gratitude plays in the building and maintenance of relationships (Algoe & Haidt, 2009).

Theoretical Implications

The present work provides important and novel, but preliminary, evidence for the benefits of gratitude in close relationship maintenance. Our findings illuminate the role of gratitude in close relationships but by no means reveal the whole story of how gratitude affects close relationship partners. On the contrary, we see a myriad of potentially exciting topics for research. One interesting avenue for research is the possible interaction between the types of gratitude (benefit triggered vs. generalized) and relationships types (e.g., communal vs. exchange). One could speculate that benefit-triggered gratitude exerts stronger dyadic effects in exchange relationships because partners keep careful track of each other’s inputs into joint actions (Clark, 1984). Generalized gratitude may exert stronger dyadic effects in communal relationships because partners consider each others’ needs and are responsive to these needs, so that gratitude is about more than simple tit for tat. Alternatively, it is possible that benefit-triggered gratitude and generalized gratitude coexist in relationships but that they shift in their importance as relationships develop. Benefit-triggered gratitude may be particularly important for relationship formation (Algoe et al., 2008; McCullough et al., 2008), whereas generalized gratitude may become more important as relationships progress.

Moreover, the effects of gratitude may vary across horizontal and vertical relationships. To illustrate, disclosure reciprocity is reliably found in horizontal relationships (e.g., romantic partners, siblings) but not in vertical relationships. Parents do not reciprocate the disclosure of their children (Finkenauer, Engels, Branje, & Meeus, 2004). Possibly, gratitude and its intra- and interpersonal effects show similar asymmetries in vertical relationships.

Based on the interpersonal function of gratitude, both the experience and the expression of gratitude are important for relationship partners. Our research emphasized the importance of experiencing gratitude in close relationships but did not examine the expression of gratitude in close relationships. Recent research by Lambert and colleagues (2010) suggests that expressing gratitude serves to strengthen the communal bond between partners. Thus, somehow paradoxically, the expression of gratitude may operate as relationships' currency, which serves to acknowledge and repay partners' benefits and appreciation for each other.

Our research highlights the positive effects of the dyadic experience of gratitude in that both partners are grateful for each other and both act to maintain the relationship. However, it is possible that gratitude may potentially have aversive effects for the self, and the relationship. Applying the currency metaphor to gratitude, one can wonder what happens if one of the partners is "underpaid" or "overpaid" by the other. An illustration of one such scenario comes from the work of Arie Hochschild (1989; cited in Fields, Copp, & Kleinman, 2006), who investigated two-career marriages. Hochschild discussed marital conflicts stemming from feelings of not receiving enough gratitude from the spouse. To illustrate, consider a marriage in which a husband contributes to the household chores by making the beds or washing the dishes. The husband can see this behavior as a worthy contribution, especially if he compares himself to his father and grandfather, who did not contribute to household chores at all. The wife, on the other hand, still has to do the remaining household chores in addition to working 8 hours per day as an office clerk. Given all the work she does, the wife feels that, relative to her own effort, her husband's contribution to the household chores is too small to merit gratitude. As a result, both partners might not feel appreciated enough for something that each of them considers as important work for their relationship. A reverse situation, in which a partner is grateful for an undeserving behavior could also be negative for the self or the relationship. Indirect evidence for this suggestion comes from work by Luchies, Finkel, McNulty, and Kumashiro (2010), who demonstrated that forgiveness can be harmful if people continue to forgive partners who are disrespectful toward the self. Thus, future research should consider the conditions under which gratitude might potentially be harmful to the self or the relationship.

Strengths and Limitations

Before closing, it is important to note several strengths and limitations of the present work. Although our study was longitudinal, a first limitation of the present research centers on the fact that we employed correlational data. Consequently, we cannot draw strong causal conclusions. In our longitudinal analyses, we found that the relations among gratitude, perceived responsiveness, and maintenance behaviors were bidirectional, indicating that these variables mutually reinforce each other. Nevertheless, the links predicted by the dyadic model (i.e., the influence of prior perceived partner responsiveness on later gratitude and the influence of prior gratitude on later maintenance behavior) were significantly stronger than the links in the opposite direction. Thus, the present research provides novel and preliminary evidence for temporal ordering of effects proposed by the dyadic model. Experimental research should examine the causal links among perceived partner responsiveness, gratitude, and relationship maintenance suggested in our model. Moreover, our research concerned the role of gratitude in close relationships between married partners. Future research should further explore the role of gratitude in various interpersonal contexts and relationships, such as parent-child relationships and work relationships.

Finally, although the interpersonal pathways emerged cross-sectionally, we did not find them longitudinally. It is possible that the time interval between the data collections was too long. Our measurements required participants to remember their partner's maintenance behaviors in a particular week almost 1 year previously, which might be too long to predict responsiveness or gratitude 1 year later. In line with this suggestion, research shows that relationship maintenance is linked to relationship satisfaction when assessed contemporaneously but fails to predict satisfaction over time (e.g., Canary et al., 2002; Ogolsky, 2009). It is also possible that the lack of interpersonal effects is the result of the types of measurement we used to assess maintenance and gratitude. Maintenance was measured at a specific level, whereas gratitude was measured at a general level. Thus, future research should employ more general maintenance behavior ratings to test their relation to generalized gratitude over time.

At the same time, our results are noteworthy in that they rest on data obtained from both partners in ongoing relationships. To our knowledge, the present research is the first to investigate gratitude in the context of marital relationships. Our sample of couples was considerable, and we observed consistent patterns of results across three data collections in tests of our key hypotheses. Our findings thereby promote confidence in the dual function of gratitude for relationship maintenance. As hypothesized by the dyadic model, the experience of gratitude seems to build a reciprocal system of positive behavior, where partners'

positive acts mutually reinforce each other. Our model is consistent with other models showing that partners' behaviors, feelings, and cognitions form a sustainable cycle of relationship functioning (e.g., mutual cyclical growth model; Wieselquist et al., 1999). Although our study focused on maintenance behaviors, it is likely that gratitude motivates other prorelationship behaviors. For instance, one can imagine that gratitude may also influence accommodation (Finkel & Campbell, 2001), forgiveness (Fincham, Beach, & Davila, 2004), and sacrifice (Van Lange et al., 1997). Such possible interactions with other prorelationship behaviors would be in line with our suggestion that gratitude, in particular generalized gratitude, is more than a simple exchange of benefits (Algoe & Haidt, 2009). It motivates people to respond to each other's needs in a noncontingent, need-based fashion, which makes generalized gratitude particularly functional in close relationships.

Concluding Remarks

The present work offers an important contribution to recent research on the dual function of gratitude in social contexts. We have demonstrated that the experience of gratitude is an important part of a relationship maintenance system, in that it functions as a detector and a motivator for relationship maintenance behavior. Specifically, gratitude emerges as a response to the detection of close partners' maintenance behavior and responsiveness. Moreover, gratitude motivates partners to engage in maintenance behavior. Importantly, these signaling and motivating functions of gratitude have dyadic effects as they occur both within individuals and across partners in close relationships. Thus, we show that, in line with Proust's quotation, being grateful to the ones we love benefits ourselves as well as our relationships with our loved ones.

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Note

1. In this structural equation model, the unstandardized effects a, b, and c', and therefore also the indirect effect, were constrained to be equal for husband and wives because no gender differences were found.

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