

BRADY, ASHLYN L., M.A. Examining the Association Between Gratitude and Sexual Communal Strength. (2019)
Directed by Dr. Levi R. Baker. 63 pp.

Maintaining sexual satisfaction is a critical, yet challenging, aspect of most romantic relationships. Sexual communal strength (SCS)—i.e., the extent to which people are motivated to be non-contingently responsive to their partners' sexual needs—accounts for why some couples are able to maintain sexual and relationship satisfaction despite such challenges. However, research has yet to identify what factors promote SCS. Given that feeling and expressing gratitude function to motivate intimates to maintain valuable relationships, expressing gratitude should increase intimates' motivation to meet their partners' sexual needs. Further, given that receiving expressions of gratitude should increase liking, and people are motivated to maintain relationships with others they like, receiving gratitude should similarly increase intimates' motivation to meet their partners' sexual needs. Two studies of romantic partners demonstrated that both expressing and receiving gratitude is associated with SCS. A third experiment of couples failed to successfully manipulate gratitude and thus was unable to test the causal association between gratitude and SCS. Results from Studies 1-2 further understanding about what qualities or behaviors promote SCS. Future research would benefit by developing a more successful manipulation of gratitude to better understand the causal association between gratitude and SCS.

EXAMINING THE ASSOCIATION BETWEEN
GRATITUDE AND SEXUAL
COMMUNAL STRENGTH

by

Ashlyn L. Brady

A Thesis Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Greensboro
2019

Approved by

Committee Chair

To my parents, Bill and Laurie Brady, who always know just what to say. Everything I have accomplished is a reflection of your unconditional love and unwavering support. Your words of encouragement, helpful advice, and comforting jokes are the unwritten words that fill these pages. Thank you for all you have done and all you continue to do.

APPROVAL PAGE

This thesis written by ASHLYN L. BRADY has been approved by the following committee of the Faculty of The Graduate School at the University of North Carolina at Greensboro.

Committee Chair _____

Committee Members _____

Date of Acceptance by Committee

Date of Final Oral Examination

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
CHAPTER	
I. INTRODUCTION	1
The Relational Benefits of Sexual Communal Strength	2
Gratitude	4
The Present Research	8
II. STUDY 1	10
Method	10
Results.....	12
Discussion.....	13
III. STUDY 2	14
Method	14
Results.....	15
Discussion.....	17
IV. STUDY 3	18
Method	18
Results.....	23
V. DISCUSSION	28
Implications and Future Directions.....	28
Study Strengths and Weaknesses.....	32
Conclusion.....	33
REFERENCES	34
APPENDIX A. TABLES.....	45
APPENDIX B. THE SEXUAL COMMUNAL STRENGTH SCALE	49

APPENDIX C. THE APPRECIATION IN RELATIONSHIPS (AIR) SCALE	50
APPENDIX D. THE COMMUNAL STRENGTH MEASURE	52
APPENDIX E. POSITIVE AND NEGATIVE AFFECT SCHEDULE.....	53
APPENDIX F. MANIPULATION CHECK	54
APPENDIX G. DEMOGRAPHICS.....	56

LIST OF TABLES

	Page
Table 1. Descriptive Statistics and Correlations among Variables in Study 1	45
Table 2. Descriptive Statistics and Correlations among Variables in Study 2	46
Table 3. Descriptive Statistics and Correlations among Variables in Study 3	48

CHAPTER I

INTRODUCTION

Maintaining sexual satisfaction is a critical part of most romantic relationships. Indeed, most intimates consider a satisfying sexual relationship to be a key aspect of romantic relationships (Impett, Muise, & Peragine, 2014), and sexual satisfaction is frequently associated with greater relationship (Sprecher, 2002) and individual well-being (Laumann et al., 2006). Yet, over the course of a relationship, most couples experience declines in sexual, and thus relational, satisfaction (McNulty, Wenner, & Fisher, 2016; Sprecher & Regan, 1998). The importance of sexual satisfaction for relationship and individual well-being, along with the challenges associated with sustaining sexual satisfaction over time, suggests the need to better understand how couples can maintain their sexual satisfaction.

Recent research suggests that sexual communal strength (SCS; Muise, Impett, Kogan, & Desmarais, 2013)—i.e., the motivation to meet a partners’ sexual needs without the expectation of reciprocation—may buffer intimates from normative declines in sexual satisfaction. Indeed, SCS has been found to predict greater sexual responsiveness, sexual desire, and individual and relationship satisfaction (Day, Muise, Joel, & Impett, 2015; Muise, Impett, Kogan, & Desmarais, 2013; Muise & Impett, 2015; Muise, Kim, Impett, & Rosen, 2017). Nevertheless, research has yet to identify factors

that motivate intimates to meet their partners' sexual needs. The goal of the current research is to examine a potential determinant of SCS: expressing and receiving gratitude. The remainder of the introduction is organized into three sections. The first section distinguishes SCS from related constructs and highlights the benefits of SCS. The second section defines gratitude and reviews theory and research suggesting that expressing and receiving gratitude should increase SCS. Finally, the third section describes the goals and hypotheses of the present study.

The Relational Benefits of Sexual Communal Strength

There are theoretical reasons to expect that SCS is a critical motive for maintaining successful and stable romantic relationships. In essence, SCS is a domain-specific form of communal strength (CS). Whereas CS refers to the motivation to respond to a partner's global needs without the expectation of reciprocation (Mills et al., 2004), SCS specifically refers to fulfilling a partner's sexual needs. Further, several theoretical perspectives, including attachment theory (Brennan, & Shaver, 1995; Collins, Ford, Guichard, Kane, & Feeney, 2010), interdependence theory (Reis, 2014; Rusbult, Drigotas, & Verette, 1994), the ideal standards model (Fletcher & Simpson, 2000), and transactive goal dynamics theory (Fitzsimons, Finkel, & vanDellen, 2015), all suggest that people tend to like others who meet their needs, and this increased liking motivates behaviors that increase commitment and stability. Further, given that people in committed, monogamous relationships are expected to avoid fulfilling their sexual needs outside of their relationship, intimates often rely exclusively on one another for the

fulfillment of their sexual needs (Rubin, Moors, Matsick, Ziegler, & Conley, 2014) and thus tend to highly value partners who are responsive to their sexual needs (Byers, 2004). Research is also consistent with the idea that intimates tend to be more satisfied with, and more committed to, romantic partners who are motivated to meet their sexual needs. For example, Muise and Impett (2015) demonstrated across two dyadic, longitudinal studies that intimates' SCS was associated with their partners remaining more satisfied with, and thus committed to, their relationships. Similarly, Day and colleagues (2015) found in a 21-day daily diary study that intimates' SCS was associated with both their own and their partners' sexual satisfaction and relationship satisfaction, after controlling for CS. Thus, SCS is strongly associated with both partners' sexual and relationship satisfaction above and beyond global CS.

It is also important to distinguish SCS from other, often negative, sexual experiences. For instance, SCS does not suggest the presence of sexual coercion, which is nearly always associated with negative outcomes (O'Sullivan, Byers, & Finkelman, 1998), nor is it associated with a motivation to avoid negative outcomes such as conflict (Muise et al., 2013). In fact, whereas people high in SCS often maintain greater sexual and relationship satisfaction over time (Muise et al., 2013), intimates that engage in consensual, undesired sex to avoid negative outcomes, such as fear of disappointing their partner or avoiding relationship conflict, often become less satisfied with their relationships over time (Katz & Tirone, 2008). Similarly, people high in unmitigated sexual communion—or the tendency to meet a partner's needs to the exclusion of one's own needs—also report more negative sexual experiences and lower relationship

satisfaction (Muisse & Impett, 2014). Given that SCS is a motive, we would expect SCS to be influenced by both dispositional qualities of the individual (e.g., agreeableness), and situational factors such as qualities of the relationship (e.g., commitment); however, research has yet to examine whether situational factors can indeed influence SCS, which is one of the goals of the current study.

Gratitude

We propose that gratitude increases intimates' SCS. Gratitude is a positively-valenced emotion that arises when people perceive that another person's (i.e., a benefactor) behavior has benefitted them (i.e., the beneficiary) and is costly to the benefactor (Algoe, Haidt, & Gable, 2008; McCullough, Kilpatrick, Emmons, & Larson, 2001). Unlike indebtedness, which refers to feelings of obligation that arise from being the beneficiary of a costly act and is typically associated with negative outcomes (Pelser et al., 2015), a growing body of research has revealed numerous benefits of gratitude. More specifically, feeling grateful is associated with greater intrapersonal outcomes such as positive affect, optimism, and greater satisfaction with life (Hill & Allemand, 2011; McCullough, Emmons, & Tsang, 2002), and relational outcomes, such as prosocial behavior and relationship satisfaction (Algoe et al., 2008; Hill & Allemand, 2011). For example, Algoe and colleagues (2010) demonstrated in a 14-day daily diary study of romantic couples that gratitude was associated with daily increases in relationship closeness and satisfaction for both the beneficiary and benefactor.

Although there are many reasons why gratitude might increase intimates' relationship satisfaction (see Algoe et al., 2010; Kashdan et al., 2018), one unexamined

reason may involve SCS. In particular, there is reason to expect that both expressing and receiving expressions of gratitude will increase SCS. First, regarding feelings and expressions of gratitude, Algoe and colleagues' (2008) find-remind-and-bind theory of gratitude suggest that gratitude functions to strengthen relationships with responsive partners. Specifically, they argue that feeling grateful reminds the recipient of their high-quality relationship partner and subsequently binds the couple more closely together by increasing the motivation to remain engaged in a high-quality relationship. Being reminded of a partner's value should consequently enhance intimates' motivation to attend to their partner's needs. Furthermore, interdependence perspectives (e.g., Kelley & Thibaut, 1978) suggests that partners in committed relationships, compared to partners in less committed relationships, should engage in more prosocial behaviors in order to maintain the relationship because it is advantageous to maintain relationships with people that benefit us.

Expressing feelings of gratitude toward a partner should further reinforce those feelings and thus further strengthen relationships with responsive partners. For instance, self-perception theory (Bem, 1972; Laird & Bresler, 1992) suggests that attitudes change to become more consistent with behavior; thus, expressing gratitude should remind intimates of their partners' value (Algoe et al., 2010) and thus strengthen feelings of gratitude. Consistent with this idea, Lambert and colleagues (2010) revealed that expressions of gratitude toward a friend were associated with strengthened positive perceptions of that relationship, including a heightened motivation to attend to the friend's needs. Thus, feeling and expressing gratitude serves to improve and promote the

relationship by increasing the expresser's perception of being in a valuable relationship with the benefactor and motivating the beneficiary to be responsive to their partners' needs.

Several studies are consistent with the idea that feelings and expressions of gratitude benefit relationships. Specifically, Algoe et al. (2008) demonstrated in a brief longitudinal study that participants who felt more gratitude after receiving an anonymous gift reported having higher quality relationships (e.g., feelings of closeness) with the gift-giver one month later. Similarly, in an experience sampling of long-term married couples, one's own felt gratitude was related to both own and partner reports of marital satisfaction (Gordon, Arnette, & Smith, 2011). In addition to enhanced relationship quality, feelings of gratitude motivate people to want to meet a benefactor's needs and thus engage in more sacrificial behaviors. Bartlett & DeSteno (2006) found that people made to feel grateful toward a benefactor were more willing to help the benefactor on an unrelated, costly task (e.g., completing a taxing survey) compared to people not made to feel grateful. Furthermore, feelings of gratitude toward a partner produced spontaneous desires to strengthen the relationship with the benefactor and repay the kind actions (Algoe & Haidt, 2009).

Second, receiving expressions of gratitude should similarly increase recipients' SCS. Indeed, several lines of research suggest that people like others who express their appreciation for them. For example, being appreciated should fulfill self-enhancement and esteem needs (Martz et al., 1998; Sedikides & Gregg, 2008) and thus be rewarding (Algoe, Kurtz, & Hilaire, 2016). Given that people like others more to the extent that

others create rewarding experiences (Weinstein & Ryan, 2010), receiving expressions of gratitude should increase liking of the partner who expressed such gratitude. Similarly, receiving gratitude should also reduce recipients' relational uncertainty because gratitude signals that the recipient is valued (Algoe, 2012), and intimates tend to like partners more to the extent that they are confident in those partners' regard (Holmes, Clark, & Reis, 2004). Finally, as mentioned earlier, people tend to be more motivated to meet their partner's needs to the extent that they like those partners (Impett et al., 2003; Landis et al., 2014).

Extant empirical work supports the idea that expressions of gratitude increase recipients' motivation to act communally. For example, Buckley, Winkel, and Leary (2004) showed that rejection—a behavior signaling that one is not appreciated—led to increases in antisocial behavior (e.g., insulting, ignoring) directed toward the individuals who expressed such rejection. Similarly, Williams and Bartlett (2015) demonstrated that students who were thanked for their mentorship were more motivated to continue their relationship with their mentee than were students who were not thanked for their mentorship. Finally, in a series of 4 experiments, Grant and Gino (2010) found that helpers who were thanked for their efforts were more likely to engage in prosocial behaviors (e.g., further helping a fellow student) than helpers who were not thanked for their efforts.

Although the theory and research presented thus far suggests that gratitude affects global communal motivation, there is reason to expect that expressing and receiving gratitude would have even stronger implications for intimates' sexual motivation (i.e.,

SCS) because of the importance that sex holds within romantic relationships. Unlike other personal or relational needs (e.g., companionship, esteem) that can be fulfilled by multiple people, sexual needs are expected to be fulfilled only by one's romantic partner for intimates in committed monogamous relationships (Rubin et al., 2014). As such, intimates pay greater attention to whether their partners are meeting their sexual needs (Byers, 2005) and sexual fulfillment plays an important role in maintaining romantic relationships (Impett, Muise, & Peragine, 2014; Sprecher, 2002). Given that communally motivated intimates tend to prioritize behaviors they know those partners like (Stanley & Markman, 1992), intimates who desire to maintain their romantic relationship, such as those who expressed or received gratitude, should be particularly motivated to meet their partners' sexual needs.

The Present Research

Given that SCS is important for maintaining sexual, and thus relationship, satisfaction, there is a critical need to identify factors that promote SCS. We predicted that both expressing and receiving gratitude would increase SCS in romantic relationships. We conducted three studies to test these ideas. Studies 1 and 2 were exploratory studies intended to identify whether gratitude was associated with SCS; participants in romantic relationships completed measures to assess SCS, CS, and gratitude. Study 3 was an experiment intended to test the causal relationship between gratitude and SCS; both members of romantic couples were randomly assigned to discuss with one another either the thing they appreciated most about their partner or a positive

event that happened to their partner. Participants subsequently reported their perceptions of the discussion and SCS.

CHAPTER II

STUDY 1

Study 1 was a pilot study conducted to test the prediction that both expressing and receiving gratitude would be associated with greater SCS. Participants in romantic relationships completed online questionnaires assessing their tendency to express feelings of gratitude for their partner, receive expressions of gratitude from their partner, SCS, CS, and demographic information.

Method

Participants. Participants were 249 individuals who were recruited using the Mechanical Turk service on Amazon.com (MTurk). Sixty-four participants were excluded for failing attention checks. The remaining 185 participants (75 men, 108 female) had a mean age of 33.7 years ($SD = 9.6$). Participants were required to be in a romantic relationship for at least three months ($M = 24.2$, $SD = 38.54$); 87 (47%) participants were married, 69 (37.3%) were dating their partner exclusively, 16 (8.6%) were engaged, and 13 (7%) were dating their partner casually.

Procedure. Participants completed all procedures online using Qualtrics survey software. After providing informed consent, participants completed questionnaires assessing their SCS, feelings of gratitude for their partner and feelings of gratitude received from their partner, CS, and demographic information. Finally, participants were debriefed and received \$0.50 for completing the study.

Measures.

Sexual Communal Strength. To assess SCS, participants completed the Sexual Communal Strength Measure (Appendix B; Muise et al., 2013). This measure requires individuals to respond to six questions that assess their sexual communal strength within the romantic relationship (e.g., “how high a priority for you is meeting the sexual needs of your partner?”, “how happy do you feel when satisfying your partner’s sexual needs?”) using an 11-point scale (1 = *not at all*, 11 = *extremely*). Appropriate items were reverse coded and all items were summed. Internal consistency was acceptable ($\alpha = .67$).

Gratitude. Participants completed the Appreciation in Relationships Scale (Appendix C; AIR; Gordon et al., 2012). The AIR consists of two subscales: the first contains nine questions that assess feelings of gratitude expressed to the partner (e.g., “I often tell my partner how much I appreciate him/her”) and the second contains seven questions that assess expressions of gratitude received from their partner (e.g., “my partner often tells me the things that s/he really likes about me”). Participants respond to all items using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Appropriate items were reverse coded and items within both subscales were summed. Internal consistency of both the appreciative items ($\alpha = .84$) and the appreciated items ($\alpha = .86$) were good.

Communal Strength. Participants completed the Communal Strength Measure (Appendix D; Mills et al., 2004). This measure requires individuals to respond to 10 questions that assess their communal strength within the romantic relationship (e.g., “how happy do you feel when doing something that helps your partner?”) using an 11-point

scale (1 = *not at all*, 11 = *extremely*). Appropriate items were reverse coded and all items were summed. Internal consistency was good ($\alpha = .84$).

Demographics. Participants completed a variety of questions to assess their age, gender, ethnicity, relationship status, and relationship length (Appendix G).

Results

Descriptive Statistics and Preliminary Analyses. Descriptive statistics and bivariate correlations appear in Table 1. Men and women did not differ in their reports of SCS, $t(181) = 0.12, p = .903, d = .02$, feelings of gratitude expressed toward their partner, $t(181) = -0.46, p = .643, d = .07$, or feelings of gratitude received from their partner, $t(181) = 0.34, p = .739, d = .05$.

Gratitude and SCS. To examine the implications of gratitude for SCS, we first examined the bivariate associations between SCS and expressing and receiving gratitude. Results indicated that SCS was positively associated with both expressing ($r = .53, p = .010$) and receiving ($r = .50, p = .010$) gratitude. Next, we examined whether SCS continued to be positively associated with both expressing and receiving gratitude after controlling for CS. First, we regressed SCS onto expressions of gratitude and CS. Results indicated that expressions of gratitude were significantly associated with greater SCS, $B = 0.25, SE = 0.07, t(182) = 3.43, p = .001, r = .66$, after controlling for CS. Second, we regressed SCS onto receiving expressions of gratitude and CS. Results indicated that receiving gratitude from the partner was significantly associated with greater SCS, $B = 0.34, SE = 0.07, t(182) = 5.03, p < .001, r = .69$, after controlling for CS. Finally, supplemental analyses that included the participants who failed attention checks indicated

that SCS remained significantly positively associated with both expressions of gratitude, $B = 0.23$, $SE = 0.07$, $t(207) = 3.21$, $p < .005$, $r = .68$, and reception of gratitude, $B = 0.33$, $SE = 0.07$, $t(207) = 5.00$, $p < .001$, $r = .70$, after controlling for CS.

Discussion

Study 1 provides initial evidence that both expressing and receiving gratitude were significantly associated with greater SCS, above and beyond their effects on CS. However, Study 1 is limited due to assessing the variables of interest in only one member of the couple rather than both romantic partners. In particular, given that global sentiment towards a partner might not only shape intimates' SCS, but also bias their perceptions of behavior (see Weiss, 1980), the associations revealed in Study 1 might reflect global sentiment (see Weiss, 1980). As such, both partners reported their expressions and reception of gratitude and SCS in Study 2, allowing us to examine the association between participants' SCS and their partners' reports of gratitude, ensuring that any obtained associations between SCS and gratitude were not simply due to sentiment override.

CHAPTER III

STUDY 2

Data from a brief longitudinal study was also used for exploratory analysis. This study was intended to extend Study 1 by replicating the initial findings in a dyadic sample. This prediction was tested in a brief longitudinal study of romantic couples, in which couples reported SCS, CS, and gratitude at three different time points. Again, we predicted that both expressing and receiving gratitude would be associated with greater SCS.

Method

Participants. Participants were 118 heterosexual couples (236 individuals; 119 male, 117 female) recruited from the United States through Craigslist, and were participating in an ongoing, broader study of romantic relationships. Participants had a mean age of 31.6 ($SD = 10.34$) and had been in their current relationship from 4 months to 30 years ($M = 4.9$ years, $SD = 5.3$ years).

Procedure. Couples who agreed to participate were individually emailed a link to a 30-minute online survey, and were instructed to complete the questionnaires independent from their partner. At Baseline (Time 1), twenty-one days after Baseline (Time 2), and three months after Baseline (Time 3), both members of the couple completed the same measures of SCS, CS, and gratitude that were used in Study 1. Each partner was paid \$40 for completing the three surveys.

Measures.

Sexual Communal Strength. Spouses completed the Sexual Communal Strength Measure (Appendix B; Muise et al., 2013) described in Study 1. Appropriate items were reverse coded and all items were summed. Internal consistency was acceptable ($\alpha = .69$).

Gratitude. Spouses completed the Appreciation in Relationships Scale (Appendix C; AIR; Gordon et al., 2012) described in Study 1. Appropriate items were reverse coded and items within both subscales were summed. Internal consistency of both the appreciative items ($\alpha = .85$) and the appreciated items ($\alpha = .91$) were good.

Communal Strength. Spouses completed the Communal Strength Measure (Appendix D; Mills et al., 2004) described in Study 1. Appropriate items were reverse coded and all items were summed. Internal consistency was acceptable ($\alpha = .73$).

Demographics. Participants completed a variety of questions to assess their age, gender, ethnicity, relationship status, and relationship length (Appendix G).

Results

Descriptive Statistics and Preliminary Analyses. Descriptive statistics and bivariate correlations appear in Table 2. At baseline, men reported higher levels of SCS, $t(234) = -2.28, p = .023, d = .30$, as well as receiving greater expressions of gratitude from their partner, $t(206) = -2.77, p = .006, d = .36$, than did women. In contrast, women reported expressing more gratitude than did men, $t(234) = 2.68, p = .008, d = .35$.

Gratitude and SCS. To examine the implications of gratitude for SCS, we estimated four, three-level models in HLM 7.01 (Raudenbush, Bryk, & Congdon, 2013), in which SCS at each time point was regressed onto one of the four gratitude scores at

that time point (i.e., own reports of own expressed gratitude, own reports of received gratitude, partners' reports of expressed gratitude, partners' reports of received gratitude) and wave of assessment to ensure any effects that emerged were not due to fluctuations in these variables over time caused by other factors (see Bolger & Laurenceau, 2013). The non-independence of repeated assessments was controlled in the second level of the model that allowed for a randomly varying intercept and the non-independence of couples' data was controlled in the third level of the model that allowed for a randomly varying intercept. Results indicated that participants' reports of their own SCS at each time point were positively associated with concurrent reports of their expressions of gratitude as reported by themselves, $B = 0.35$, $SE = 0.06$, $t(166) = 5.45$, $p < .001$, $r = .39$, and their partners, $B = 0.15$, $SE = 0.05$, $t(150) = 2.97$, $p = .004$, $r = .24$. Further, participants' reports of their own SCS at each time point were positively associated with concurrent reports of the extent to which they received gratitude as reported by themselves, $B = 0.19$, $SE = 0.05$, $t(166) = 3.70$, $p < .001$, $r = .28$, and their partners, $B = 0.22$, $SE = 0.07$, $t(150) = 3.19$, $p = .002$, $r = .25$.

Supplemental analyses that controlled for CS revealed a relatively similar pattern of results. In particular, participants' reports of their own SCS at each time point were positively associated with concurrent reports of their own expressions of gratitude as reported by themselves, $B = 0.14$, $SE = 0.06$, $t(45) = 2.22$, $p = .032$, $r = .31$; however, participants' reports of their own SCS at each time point were no longer associated with concurrent reports of their own expressions of gratitude as reported by their partners, $B = 0.04$, $SE = 0.04$, $t(44) = 1.06$, $p = .296$, $r = .16$. Further, participants' reports of their own

SCS at each time point were marginally positively associated with concurrent reports of the extent to which they received gratitude as reported by themselves, $B = 0.08$, $SE = 0.04$, $t(45) = 1.97$, $p = .055$, $r = .28$, and positively associated with their partners' reports at traditional levels of significance, $B = 0.10$, $SE = 0.05$, $t(44) = 2.13$, $p = .039$, $r = .31$.

Discussion

Study 2 provides additional evidence that SCS is associated with both the expression and reception of gratitude in a multi-wave sample of romantic couples. Specifically, participants' reports of their own SCS at each time point were positively associated with reports of their own expressions of gratitude and the extent to which they received gratitude, as reported by both themselves and their partners. Nevertheless, Studies 1 and 2 are limited due to relying on cross-sectional methodologies, which preclude conclusions about the causal nature of these associations. Thus, in Study 3, we manipulated participants' expressions and reception of gratitude to provide causal evidence that gratitude increases SCS in a sample of romantic couples.

CHAPTER IV

STUDY 3

The goal of Study 3 was to provide an experimental test of our predictions. Undergraduate students in romantic relationships attended a laboratory session with their romantic partner. Both members of the couple independently reported their current mood and were then randomly assigned to complete a task including two discussions that either did or did not involve expressing gratitude to one another. After each discussion, partners completed manipulation checks, and reported their SCS, CS, and demographics. We predicted that SCS would be greater among couples in the gratitude condition than among couples in the control condition.

Method

Participants. Participants were 254 undergraduate students (127 couples) at the University of North Carolina at Greensboro, a comprehensive state university (and Minority Serving Institution for African American students). Twenty-four participants (12 couples) were excluded for not following study instructions. The remaining 230 participants (115 couples; 107 male, 123 female) had a mean age of 19.4 years ($SD = 3.22$). Participants were required to be in a romantic relationship for at least three months; 173 (75.2%) participants were dating their partner exclusively, 32 (13.9%) were dating their partner casually, 13 (5.7%) were engaged, and 12 (5.2%) were married. Two-hundred and two (87.8%) participants were in heterosexual relationships and 28 (12.2%)

participants were in same-sex relationships. Finally, 98 (42.6%) participants identified as Caucasian, 83 (36.1%) as African American, 22 (9.6%) as Hispanic, and the remaining 27 (11.7%) participants identified as other or two or more ethnicities. Participants were granted class credit for their participation in the study; participants who did not need course credit (i.e., partners) were entered in a raffle to win one of three \$25 gift cards.

Our data-collection stopping rule was to recruit subjects until at least 100 couples (200 participants) completed the study. The actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006) guided our selected sample size. APIM controls for interdependence of dyadic analyses and uses both partner's predictor variables to predict both partners' outcome. Data from Study 2 was used to determine the predicted effect size for the current study and was the basis of the power analysis that justified the sample size for the present study. With an alpha set at .05, APIMPower (Ackerman, Ledermann, & Kenny, 2016) determined that a sample size of 41 couples would yield power > .80. Nevertheless, given that experimental manipulations tend to yield smaller effect sizes than cross-sectional self-reports, we decided to increase our sample size. In particular, our power to detect small-to-medium effects ($r = .20$) with 100 couples would yield power > .80.

Procedure. Participants were recruited via an online sign-up system and completed the study in a laboratory setting at the University of North Carolina at Greensboro. After providing informed consent, both members of the couple were separated and reported their present mood, as well as additional questionnaires that are unrelated to the current hypotheses. After, participants were given the opportunity to

identify discussion topics. In particular, couples were randomly assigned to one of two conditions for two discussions modeled after a previously developed manipulation of gratitude (Algoe, Fredrickson, & Gable, 2013). Couples in the *gratitude condition* were asked to discuss the thing about their partner that they are most grateful for. Specifically, couples were told the following: “We are interested in how couples talk about the personality traits and behaviors that they like about one another. We’d like you to think about and describe the one thing you appreciate most about your partner. Specifically, talk about what aspect of your partner you are most grateful for and why it is so important to you.” Couples in the *control condition* were asked to discuss the best thing that has happened to their partner during the relationship. Specifically, participants were told the following: “We are interested in how couples talk about their partner’s experiences. We’d like you to think about and describe the best thing that has happened to your partner during the entire time the two of you have been together. Specifically, talk about what was the best thing that has happened to your partner and why it was so great.” Participants in the control condition discussed positive events that involved the partner to ensure differences between those in the two conditions were due to gratitude and not simply reflecting about positive experiences and/or the partner.

After identifying topics, partners were reunited for each discussion. Partners were randomly selected to determine who spoke first and who spoke second. Each partner had three minutes to discuss their topic with their partner. Although this is a relatively short period of time, short discussions such as these often yield strong effects (e.g., Carrère & Gottman, 1999) and longer discussions of gratitude might inadvertently decrease

gratitude due to difficulty associated with maintaining a conversation about this topic (see Clarkson, Smith, Tormala, & Dugan, 2017). Both participants were instructed that they could communicate during the discussion; however, they were instructed to remain focused on the specific partner's chosen topic for that discussion turn.

Given that Studies 1 and 2 revealed that both expressing gratitude and receiving gratitude were associated with SCS, rather than attempting to dissociate the effects of receiving and expressing gratitude by crossing partners' conditions (e.g., one partner expresses gratitude, the other partner does not express gratitude), each member of the dyad was assigned to the same condition as their partner to maximize power. Although this precludes us from identifying whether changes in SCS are due to expressing gratitude, receiving gratitude, or both, supplemental analyses based on responses from the manipulation check can provide a non-experimental test of this question. Specifically, after each speaking turn, the couples independently completed a manipulation check that assessed the extent of gratitude each member of the couple expressed during that speaking turn. This manipulation check was used to evaluate whether (a) couples in the gratitude condition expressed greater gratitude than did those in the control condition, and (b) intimates' SCS is associated with reports of expression and reception of gratitude to examine the unique contributions of expressing and receiving gratitude. Finally, additional responses from the questionnaire that included the manipulation check allowed us to confirm that both conditions yielded equally positive discussion topics. After both partners completed their speaking turn and subsequent manipulation checks, they independently reported their SCS, CS, and demographic information (see Appendix

B). SCS and CS were not assessed prior to the manipulation to reduce demand characteristics. Finally, subjects were debriefed independently. The entirety of the study session lasted approximately 40 minutes.

Measures.

Positive and Negative Affect Schedule – Short Form. To assess participants' mood prior to the manipulation, participants completed the 10-item Positive and Negative Affect Schedule (Appendix E; PANAS-SF; Kercher, 1992). This measure includes two subscales, positive affect (PA) and negative affect (NA), and requires individuals to report their present feelings and emotions (e.g., excited, distressed) using a 5-point scale (1 = *not at all*, 5 = *very much*). Items within both subscales were summed. Internal consistency of both the positive affect items ($\alpha = .73$) and the negative affect items ($\alpha = .79$) were acceptable.

Manipulation Check. To assess the effectiveness of the gratitude manipulation, and to examine differences between the effect of expressing gratitude versus receiving gratitude on SCS, participants responded to two face-valid items (“during the conversation, my partner made me feel appreciated”, “during the conversation, I made my partner feel appreciated”), along with 18 other behaviors intended to hide the purpose of the manipulation check (see Appendix F for the full measure), using a 9-point scale (1 = *do not agree at all*, 9 = *agree completely*). We created a variable for each participant that indicated how much gratitude they expressed during the discussion in which it was their turn to express gratitude by averaging the responses from their own manipulation check (i.e. actor's perceptions of expressed gratitude) and their partner's manipulation

check (i.e. target's perceptions of actors' expressed gratitude). The association between actor's perceptions of expressed gratitude and target's perceptions of actors' expressed gratitude ($r = .24, p < .001$) suggest that partners moderately agreed with one another about the amount of gratitude that each person expressed.

Sexual Communal Strength. Participants completed the same Sexual Communal Strength Measure (Appendix B; Muise et al., 2013) used in Studies 1 and 2. For the current study, this measure was slightly adapted to reflect partners' momentary feelings after completing the discussion task ("currently, how high a priority for you is meeting the sexual needs of your partner?"). Appropriate items were reverse coded and all items were summed. Internal consistency was acceptable ($\alpha = .78$).

Communal Strength. Participants also completed the same Communal Strength Measure (Appendix D; Mills et al., 2004) used in Studies 1 and 2. This measure was also adapted to reflect partners' current feelings (e.g., "at this particular moment, how happy do you feel when doing something that helps your partner?"). Appropriate items were reverse coded and all items were summed. Internal consistency was acceptable ($\alpha = .72$).

Demographics. Participants completed a variety of questions to assess their age, gender, ethnicity, and relationship status (Appendix G).

Results

Descriptive Statistics and Preliminary Analyses. Descriptive statistics and bivariate correlations appear in Table 3. Men reported lower SCS compared to women, $t(114) = -3.47, p < .001, d = .39$; however, men and women did not differ in the amount of gratitude expressed, $t(224) = -0.85, p = .397, d = .11$, as averaged across both partners'

reports, nor in the amount of gratitude received, $t(224) = 0.15, p = .881, d = .02$, as averaged across both partners' reports. Within couples, intimates' reports of SCS were positively associated with their partners' reports of SCS ($r = .20, p = .003$), indicating that partners reported comparable SCS. Partners were also similar to one another in the amount of gratitude expressed during their conversations ($r = .36, p < .001$).

Manipulation Checks. To examine whether the manipulation successfully affected gratitude, two analyses were conducted. Both analyses used the HLM 7.03 computer program to estimate two separate two-level models in which individuals were nested within couples to control for the non-independence of the dyads. The first analysis regressed participants' reports of their own expressions of gratitude, obtained after they discussed their topic, onto a couple-level dummy-code for condition ($0 = control, 1 = gratitude$). Results suggest that couples in the gratitude condition did not report expressing more gratitude compared to couples in the control condition, $B = 0.26, SE = 0.22, t(111) = 1.19, p = .238, r = .11$. The second regressed participants' reports of their partner's expressions of gratitude, obtained after those partners discussed their topics, onto the couple-level dummy-code for condition. Results indicate that couples in the gratitude condition did not report receiving more gratitude than couples in the control condition, $B = 0.30, SE = 0.18, t(111) = 1.64, p = .104, r = .15$. In sum, the manipulation did not appear to affect participants' perceptions of how much gratitude was expressed during the conversations.

In addition to assessing whether the main manipulation was effective, two analyses were conducted to ensure that both conditions yielded equally positive

discussion topics. The first analysis regressed participants' reports of how happy they believed they made their partners, obtained from the same questionnaire that included the manipulation check, onto a couple-level dummy-code for condition (0 = *control*, 1 = *gratitude*) in a similar multi-level model. Results suggest that couples in the gratitude condition did not report expressing more happiness compared to couples in the control condition, $B = 0.16$, $SE = 0.18$, $t(111) = 0.89$, $p = .378$, $r = .08$. The second analysis regressed participants' reports of how happy their partners made them, obtained from the same questionnaire, onto the couple-level dummy-code for condition. Results indicate that couples in the gratitude condition did not report receiving more expressions of happiness than couples in the control condition, $B = 0.12$, $SE = 0.16$, $t(111) = 0.76$, $p = .452$, $r = .07$. Thus, the manipulation appeared to yield equally positive discussion topics.

Gratitude and SCS. Next, to test the main prediction that gratitude increases SCS, a similar set of analyses were conducted that regressed participants' SCS scores onto a couple-level dummy-code for condition in a multi-level model, in which individuals are nested within couples to control for the non-independence of the dyads. This determined if SCS is higher among couples who were instructed to express gratitude compared to couples in the control condition. In contrast to our predictions, yet unsurprising given the ineffectiveness of the manipulation, SCS was not significantly higher among couples in the gratitude condition compared to couples in the control condition, $B = -1.51$, $SE = 1.57$, $t(113) = -0.96$, $p = .339$, $r = -.09$. Similar results were observed when controlling for CS, $B = -1.39$, $SE = 1.48$, $t(113) = -0.94$, $p = .351$, $r = -.09$.

Expressing Gratitude vs. Receiving Gratitude and SCS. To further examine the unique implications of expressing gratitude or receiving gratitude for SCS, a final set of supplemental exploratory analyses were conducted. Although both expression and reception of gratitude likely influence SCS, it would be beneficial to further discern any unique effects of expressing and receiving gratitude. Three analyses were conducted that regressed SCS scores onto (a) own expressions of gratitude to determine if expressing gratitude influences SCS; (b) partners' expressions of gratitude to determine if receiving gratitude influences SCS; and (c) both own and partners' expression of gratitude to determine whether each factor has unique effects.

The first model examined the association between SCS scores and own expressions of gratitude. Results indicate that couples' perceptions of how much gratitude each participant expressed was not associated with that person's SCS, $B = 0.13$, $SE = 0.57$, $t(112) = 0.22$, $p = .824$, $r = .02$. The second model examined the association between SCS and partners' expressions of gratitude. Results indicate that couples' perceptions of how much gratitude each participant received was not associated with that person's SCS, $B = 0.92$, $SE = 0.60$, $t(112) = 1.53$, $p = .128$, $r = .14$. Finally, the third model examined the association between SCS and both own and partners' expression of gratitude. Results indicate that neither perceptions of expressed gratitude, $B = -0.03$, $SE = 0.55$, $t(111) = -0.06$, $p = .954$, $r = -.01$, nor perceptions of received gratitude, $B = 0.93$, $SE = 0.61$, $t(111) = 1.52$, $p = .133$, $r = .14$, has unique effects on SCS.

Supplemental Analyses. Multiple supplemental analyses were conducted to further understand the relationship between SCS, expressing and receiving gratitude, and CS. The first analysis regressed participants' CS scores onto a couple-level dummy-code for condition ($0 = control$, $1 = gratitude$) in a multi-level model, controlling for SCS. Results indicate that CS was not significantly higher among couples in the gratitude condition compared to couples in the control condition while controlling for SCS, $B = 0.25$, $SE = 1.55$, $t(113) = 0.16$, $p = .870$, $r = .02$.

The second supplemental analysis assessed the association between affect prior to the discussion task and SCS. In this model, participants' SCS scores were regressed onto a couple-level dummy-code for condition ($0 = control$, $1 = gratitude$) in a similar multi-level model, controlling for positive and negative affect (assessed by the Positive and Negative Affect Schedule). Results indicate that positive affect prior to the discussion task significantly predicted SCS after controlling for negative affect, $B = 0.46$, $SE = 0.23$, $t(113) = 2.06$, $p = .042$, $r = .19$; however, negative affect prior to the discussion task marginally predicted SCS after controlling for positive affect, $B = -0.37$, $SE = 0.19$, $t(113) = -1.93$, $p = .056$, $r = -.18$. These findings align with past research that suggests positive moods influence prosocial behaviors in a variety of settings (George, 1991) and likely fosters attraction between partners (Bell, 1978), as well as perceiving ones' partner in a more positive light (Bower, 1981).

CHAPTER V

DISCUSSION

Past research has revealed the importance of SCS in maintaining sexual and relationship satisfaction (Day et al., 2015; Muise et al., 2013; Muise & Impett, 2015; Muise et al., 2017); however, no research has identified what qualities or behaviors promote SCS. The present studies expand past research by introducing a possible mechanism—expressing and receiving gratitude—that promotes SCS in romantic relationships. In Studies 1 and 2, both expressing and receiving gratitude significantly predicted greater levels of SCS among partners in romantic relationships. Although Study 3 did not reveal evidence in support of our predictions, it did not provide an adequate test of our predictions and thus future research should develop a more successful manipulation of gratitude to better understand the causal association between gratitude and SCS.

Implications and Future Directions

These findings have important theoretical and practical implications and suggest several directions for future research. First, these studies join a growing body of literature that highlights the benefits of gratitude (Algoe et al., 2010; Algoe et al., 2008; Hill & Allemand, 2011; Kashdan et al., 2018; McCullough, Emmons, & Tsang, 2002). For example, expressing and receiving gratitude has been linked with beneficial relational outcomes, including enhanced perceptions of the relationship (Lambert et al., 2010),

feelings of closeness (Algoe et al., 2008), and relationship satisfaction (Hill & Allemand, 2011). Behaviorally, gratitude is also associated with greater prosocial behavior (Grant and Gino, 2010) and relationship maintenance behaviors (Gordon et al., 2012; Lambert & Fincham, 2011). The current studies expand this growing body of literature by revealing the benefits of gratitude for sexual outcomes.

Second, future research should also examine the implications of gratitude for other sexual outcomes, such as sexual self-disclosure. Indeed, past research has revealed that expressing and receiving gratitude increases comfort with self-disclosure of emotions and concerns (see Collins & Miller, 1994; Lambert & Fincham, 2011), likely because both expressing (Algoe et al., 2010) and receiving (Weinstein & Ryan, 2010) gratitude increase liking, and people tend to be more comfortable disclosing personal information to others they like (Collins & Miller, 1994). If such increased disclosures extend to the domain of sexual communication, gratitude may increase the extent to which partners provide important information about their sexual needs to one another, thus increasing their ability to meet those needs (Clark & Finkel, 2004). Indeed, couples are often hesitant to disclose their sexual needs and preferences (Byers & Demmons, 1999), ultimately contributing to lower sexual satisfaction and impaired sexual functioning (Rehman, Rellini, & Fallis, 2011). Thus, gratitude might not only increase the motivation to meet a partner's sexual needs, but may also increase awareness about, and thus ability to fulfill, those needs if intimates are more willing to disclose of them.

Third, future research may benefit by discerning the different ways in which expressions of gratitude are perceived by the recipient and how those perceptions may

impact SCS. For instance, expressions of gratitude could be perceived by the recipient as a genuine expression of appreciation, as an attempt to manipulate or guilt the partner into responding in a certain manner, or as a sarcastic comment designed to hurt the partner (Gordon et al., 2011). Given that expressions of emotion that are perceived to be inauthentic tend to impair relationship functioning because they signal a lack of trust or openness (see Kernis & Goldman, 2005), receiving expressions of gratitude may not increase, and may even decrease, SCS when they appear disingenuous. Although participants in Study 3 expressed gratitude toward the partner, it is unknown if participants expressed genuine gratitude and/or if partners perceived those expressions as genuine; thus, future research may benefit from asking expressers to report if they were genuine and asking recipients to report if they perceived the expressions as genuine. Furthermore, just as expressions of gratitude may be perceived incorrectly, they may also not be perceived at all (Gordon et al., 2011). Specifically, expressing gratitude may become habit in long-term relationships that becomes unnoticed and therefore may not continue to increase partners' SCS or may instead evoke negative emotions. For instance, Stein (1989) revealed that volunteers at a food pantry who received less gratitude than they expected experienced more anger compared to those whose expectations were met. Thus, future research may benefit from examining whether relationship length affects perceptions of gratitude.

Fourth, the present findings can be applied to therapeutic interventions intended to improve declining sexual satisfaction. Given that declines in sexual satisfaction strongly predict declines in relationship satisfaction (McNulty et al., 2016), practitioners have

often sought to identify ways in which couples can maintain, or even improve, sexual satisfaction (for review, see McCarthy & Wald, 2012). The current results suggest that expressing gratitude may be a promising method for achieving that goal. Indeed, practitioners have already begun to incorporate gratitude into several therapeutic techniques (e.g., Kerr et al., 2015; Seligman, Steen, Park, & Peterson, 2005). For example, Seligman and colleagues (2005) demonstrated that couples who wrote and exchanged letters that described their feelings of gratitude toward one another experienced increased happiness and decreased depression. Although the benefits of these interventions may be due to numerous factors (e.g., Algoe et al., 2010; Kashdan et al., 2018), they may be at least partially due to increased SCS and sexual satisfaction. Future research may benefit by examining whether such interventions particularly benefit clients who are experiencing sexual difficulties by promoting motivations to meet a partner's sexual needs.

Finally, although the experimental manipulation in Study 3 did not successfully influence gratitude, and ultimately the expression and reception of gratitude did not significantly predict SCS, the convergent findings from Studies 1 and 2 suggest a relationship that should be further explored. Before doing so, however, it is worth considering potential explanations for this failed manipulation. Although discussion tasks have been used successfully in past research to manipulate gratitude (Algoe et al., 2013), it is possible that participants did not fully understand or correctly follow the directions given for the task. Thus, future research might benefit by recording and examining the conversations to ensure that participants are properly completing the task. Further, future

research might supplement a discussion task with other tasks that have successfully manipulated gratitude. For instance, future research should consider adding a letter-writing task in which participants must write about how much they appreciate something specific their partner does (Lambert et al., 2010).

Study Strengths and Weaknesses

Several aspects of the present studies increase our confidence in the current results. First, the effect between gratitude and SCS was observed in two different samples that were diverse in regard to ethnicity, age, sexual orientation, and relationship status, increasing our confidence in the external validity of our findings. Second, the association between gratitude and SCS was observed in Study 2 across multiple time points and within romantic couples. As seen in past research (Grant & Gino, 2010; Lambert et al., 2010), expressing and receiving gratitude is likely associated with both partners' SCS, thus this study assessed gratitude and SCS at the dyadic level to further understand the association between gratitude and SCS.

While our study provided an initial contribution to this area of research, it is not without limitations. Of foremost importance is the unsuccessful manipulation of gratitude in Study 3 that failed to provide an adequate experimental test of our predictions; thus, we are unable to draw causal conclusions about the relationship between gratitude and SCS. Second, the present studies assessed the implications of gratitude for intimates' SCS, but did not address the ultimate implications of gratitude for intimates' behavior. Nevertheless, past research has shown that SCS affects behavior, including sexual frequency (Day et al., 2015) and specifically engaging in sex for partner-focused

approach goals (Muisse et al., 2012); thus, the implications of SCS for intimates' behavior are already established. Furthermore, we proposed that liking (Weinstein & Ryan, 2010) and confidence in partners' regard (Algoe, 2012; Holmes, Clark, & Reis, 2004) may facilitate the association between gratitude and SCS, yet the present studies did not address or identify potential mechanisms for this relationship. Finally, given that the gratitude manipulation in Study 3 included one, brief task, we would not expect the effects of expressing or receiving gratitude during the discussions to influence SCS in the long-term. Thus, the present research focused on assessing the implications of gratitude for intimates' SCS at the same time point and did not consider the long-term effects of expressing and receiving gratitude on SCS. Although past research suggests that repeated expressions of gratitude toward a friend enhanced the expresser's perceptions of the friendship over time (Lambert et al., 2010), future research may benefit from directly assessing the implications of expressing and receiving gratitude for SCS in longitudinal studies of romantic partners.

Conclusion

Sexual communal strength has been shown to be a vital component in couples' ability to maintain sexual and relationship satisfaction in romantic relationships. In order to further understand how couples are able to combat normative declines in sexual, and thus relationship satisfaction, we must first understand the inner workings of SCS. The present research offers an initial step in filling this gap by revealing a potential mechanism—expressing and receiving gratitude—that promotes SCS.

REFERENCES

- Ackerman, R.A., Ledermann, T., & Kenny, D.A. (2016). Power analysis for the actor-partner interdependence model. *Unpublished manuscript*.
- Algoe, S. B. (2012). Find, remind, and bind: The functions of gratitude in everyday relationships. *Social and Personality Psychology Compass*, 6(6), 2012.
- Algoe, S. B., Fredrickson, B. L., & Gable, S. L. (2013). The social functions of the emotion gratitude via expression. *Emotion*. Advance online publication.
- Algoe, S. B., Gable, S. L., & Maisel, N. (2010). It's the little things: Everyday gratitude as a booster shot for romantic relationships. *Personal Relationships*, 17, 217-233.
- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The 'other-praising' emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology*, 4, 105-127.
- Algoe, S. B., Haidt, J., & Gable, S. L. (2008). Beyond reciprocity: Gratitude and relationships in everyday life. *Emotion*, 8, 425-429.
- Algoe, S. B., Kurtz, L. E., & Hilaire, N. M. (2016). Putting the "you" in "thank you": Examining other-praising behavior as the active relational ingredient in expressed gratitude. *Social Psychological and Personality Science*, 7, 658-666.
- Bartlett, M.Y., DeSteno, D. (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science*, 17, 319-325.

- Bell, P. A. (1978). Affective state, attraction, and affiliation: Misery loves happy company too. *Personality and Social Psychology Bulletin*, 4, 616-619.
- Bem, D.J. (1972). Self-perception theory. In *Advances in experimental social psychology* (Vol. 6, pp. 1-62). Academic Press.
- Bower, G. H. (1981). *Exchange and power in social life*. New York: Wiley.
- Brennan, K. A., & Shaver, P. R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality and Social Psychology Bulletin*, 21, 267-283.
- Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, 40, 14-28.
- Byers, E. S. (2005). Relationship satisfaction and sexual satisfaction: A longitudinal study of individuals in long-term relationships. *The Journal of Sex Research*, 42(2), 113-118.
- Byers, E. S., & Demmons, S. (1999). Sexual satisfaction and sexual self-disclosure within dating relationships. *Journal of Sex Research*, 36, 180-189.
- Carrère, S., & Gottman, J. M. (1999). Predicting divorce among newlyweds from the first three minutes of a marital conflict discussion. *Family Processes*, 38(3), 293-301.
- Clark, M.S., & Finkel, E.J. (2004). Does expressing emotion promote well-being? It depends on relationship context. *The Social Life of Emotions*, 105-126.

- Clark, M. S., & Mills, J. R. (2012) A theory of communal (and exchange) relationships. In P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins (Ed.), *Handbook of Theories of Social Psychology*. Los Angeles, CA: Sage.
- Clarkson, J., Smith, E., Tormala, Z., & Dugan, R. (2017). Group identification as a means of attitude restoration. *Journal of Experimental Social Psychology*, *68*, 139-145.
- Collins, N. L., Ford, M. B., Guichard, A. C., Kane, H. S., & Feeney, B. C. (2010). Responding to need in intimate relationships: Social support and caregiving processes in couples. *Prosocial motives, emotions, and behavior: The better angels of our nature*, 367-389.
- Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: a meta-analytic review. *Psychological Bulletin*, *116*, 457.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R). NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Dainton, M. (2003). Equity and uncertainty in relational maintenance. *Western Journal of Communication*, *67*, 164-186.
- Day, L. C., Muise, A., Joel, S., & Impett, E. A. (2015). To do it or not to do it? How communally motivated people navigate sexual interdependence dilemmas. *Personality and Social Psychology Bulletin*, *41*(6), 791-804.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective wellbeing in daily life. *Journal of Personality and Social Psychology*, *84*, 377-389.

- Fitzsimons, G. M., Finkel, E. J., & vanDellen, M. R. (2015). Transactive goal dynamics. *Psychological Review, 122*, 648-674.
- Fletcher, G. J. O., & Simpson, J. A. (2000). Ideal standards in close relationships: Their structure and function. *Current Directions in Psychological Science, 9*(3), 102-105.
- Gable, S. L., Gonzaga, G. C., & Strachman, A. (2006). Will you be there for me when things go right? Supportive responses to positive event disclosures. *Journal of Personality and Social Psychology, 91*(5), 904-917.
- George, J. M. (1991). State or trait: Effects of positive mood on prosocial behavior at work. *Journal of Applied Psychology, 76*, 299-307.
- Gordon, A. M., Impett, E. A., Kogan, A., Oveis, C., & Keltner, D. (2012). To have and to hold: Gratitude promotes relationship maintenance in intimate bonds. *Journal of Personality and Social Psychology, 103*(3), 257-274.
- Gordon, C.L., Arnette, R.A., & Smith, R.E. (2011). Have you thanked your spouse today?: Felt and expressed gratitude among married couples. *Personality and Individual Differences, 50*, 339-343.
- Grant, A. M., & Gino, F. (2010). A little thanks goes a long way: Explaining why gratitude expressions motivate prosocial behavior. *Journal of Personality and Social Psychology, 98*(6), 946-955.
- Hatfield, E., Traupmann, J., Sprecher, S., Utne, M., & Hay, J. (1985). Equity and intimate relations: Recent research. In *Compatible and incompatible relationships* (pp. 91-117). Springer, New York, NY.

- Hill, P. L., & Allemand, M. (2011). Gratitude, forgiveness, and well-being in adulthood: Tests of moderation and incremental prediction. *The Journal of Positive Psychology, 6*(5), 397-407.
- Holmes, J. G., Clark, M. A., & Reis, H. T. (2004). Perceived partner responsiveness as an organizing construct in the study of intimacy and closeness. In *Handbook of closeness and intimacy* (pp. 211-236). Psychology Press.
- Impett, E. A., Beals, K. P., & Peplau, L. A. (2003). Testing the Investment Model of Relationship Commitment and Stability in a Longitudinal Study of Married Couples. In N. J. Pallone, N. J. Pallone (Eds.), *Love, romance, sexual interaction: Research perspectives from Current Psychology* (pp. 163-181). Piscataway, NJ, US: Transaction Publishers.
- Impett, E. A., Muise, A., & Peragine, D. (2014). Sexuality in the context of relationships. In L. D. a. D. Tolman (Ed.), *APA Handbook of Sexuality and Psychology (1, pp.269-316)*. Washington, DC: American Psychological Association.
- Jung, Y., Hall, J., Hong, R., Goh, T., Ong, N., & Tan, N. (2014). Payback: Effects of relationship and cultural norms on reciprocity. *Asian Journal of Social Psychology, 17*, 160-172.
- Kashdan, T. B., Blalock, D. V., Young, K. C., Machell, K. A., Monfort, S. S., McKnight, P. E., & Ferrisizidis, P. (2018). Personality strengths in romantic relationships: Measuring perceptions of benefits and costs and their impact on personal and relational well-being. *Psychological Assessment, 30*(2), 241-258.

- Katz, J., & Tirone, V. (2008). Women's sexual compliance with male dating partners: Associations with investment in ideal womanhood and romantic well-being. *Sex Roles, 60*, 347-356.
- Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal Relationships: A Theory of Interdependence*. New York: Wiley.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Guilford Press.
- Kercher, K. (1992). Assessing subjective well-being in the old-old: The PANAS as a measure of orthogonal dimensions of positive and negative affect. *Research on Aging, 14*(2), 131-168.
- Kernis, M. H., & Goldman, B. M. (2005). A multicomponent conceptualization of authenticity: Theory and research. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp.284-357). San Diego, CA: Academic Press.
- Kerr, S. L., O'Donovan, A., & Pepping, C. A. (2015). Can gratitude and kindness interventions enhance well-being in a clinical sample? *Journal of Happiness Studies, 16*, 17-36.
- Klusmann, D. (2002). Sexual motivation and the duration of partnership. *Archives of Sexual Behavior, 31*, 275-287.
- Kogan, A., Impett, E., Oveis, C., Huis, B., Gordon, A., & Keltner, D. (2010). When giving feels good: The intrinsic benefits of sacrifice in romantic relationships for the communally motivated. *Psychological Science, 21*, 1918-1924.

- Laird, J.D., & Bresler, C. (1992). The process of emotional experience: A self-perception theory. In M.S. Clark (Ed.), *Review of personality and social psychology, No. 13. Emotion* (pp. 213-234). Thousand Oaks, CA, US: Sage Publications, Inc.
- Lambert, N. M., Clark, M. S., Durtschi, J., Fincham, F. D., & Graham, S. M. (2010). Benefits of expressing gratitude: Expressing gratitude to a partner changes one's view of the relationship. *Psychological Science, 21*(4), 574-580.
- Lambert, N.M., & Fincham, F.D. (2011). Expressing gratitude to a partner leads to more relationship maintenance behavior. *Emotion, 11*, 52-60.
- Landis, M., Bodenmann, G., Bradbury, T. N., Brandstatter, V., Peter-Wright, M., Backes, S., Sutter-Stickel, D., & Nussbeck, F. W. (2014). Commitment and dyadic coping in long-term relationships. *The Journal of Gerontopsychology and Geriatric Psychiatry, 27*(4), 139-149.
- Laumann, E. O., Paik, A., Glasser, D. B., Kang, J., Wang, T., Levinson B., . . . Gingell, C. (2006). A cross-national study of subjective sexual well-being among older women and men: Findings from the global study of sexual attitudes and behaviors. *Archives of Sexual Behavior, 35*, 145-161.
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1-62). New York: Academic Press.
- Martz, J. M., Verette, J., Arriaga, X. B., Slovik, F. L., Cox, C. L., & Rusbult, C. E. (1998). Positive illusion in close relationships. *Personal Relationships, 5*, 159-181.

- McCarthy, B., & Wald, L. M. (2012). Sexual desire and satisfaction: The balance between individual and couple factors. *Sexual and Relationship Therapy, 27*, 310-321.
- McCullough, M. E., Emmons, R. A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*(1), 112-127.
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*, 249-266.
- McNulty, J. K., Olson, M. A., Meltzer, A. L., & Shaffer, M. J. (2013). Though they may be unaware, newlyweds implicitly know whether their marriage will be satisfying. *Science, 342*, 1119-1120.
- McNulty, J. K., Wenner, C. A., & Fisher, T. D. (2016). Longitudinal associations among relationship satisfaction, sexual satisfaction, and frequency of sex in early marriage. *Archives of Sexual Behavior, 45*, 85-97.
- Mills, J., & Clark, M. S., Ford, T. E., & Johnson, M. (2004). Measurement of communal strength. *Personal Relationships, 11*, 213-230.
- Muise, A., & Impett, E. A. (2015). Good, giving, and game: The relationship benefits of communal sexual motivation. *Social Psychological and Personality Science, 6*(2), 164-172.
- Muise, A., Impett, E. A., Kogan, A., & Desmarais, S. (2013). Keeping the spark alive: Being motivated to meet a partner's sexual needs sustains sexual desire in long-

- term romantic relationships. *Social Psychological and Personality Science*, 4(3), 267-273.
- Muise, A., Kim, J. J., Impett, E. A., & Rosen, N. O. (2017). Understanding when a partner is not in the mood: Sexual communal strength in couples transitioning to parenthood. *Archives of Sexual Behavior*, 46, 1993-2006.
- Murray, A. J., & Hazelwood, Z. J. (2011). Being grateful: Does it bring us closer? Gratitude, attachment and intimacy in romantic relationships. *Journal of Relationships Research*, 2, 17-25.
- Nelson, L. D., Simmons, J. P., & Simonsohn, U. (2012). Let's publish fewer papers. *Psychological Inquiry*, 23(3), 291-293.
- Pelser, J., de Ruyter, K., Wetzels, M., Grewal, D., Cox, D., & van Beuningen, J. (2015). B2B channel partner programs: Disentangling indebtedness from gratitude. *Journal of Retailing*, 91(4), 660-678.
- Raudenbush, S., Bryk, A., & Congdon, R. (2013). HLM 7.01 for Windows [Hierarchical linear and nonlinear modeling software]. Multivariate Software. *Inc, Lincolnwood, IL.*
- Rehman, U.S., Rellini, A.H., & Fallis, E. (2011). The importance of sexual self-disclosure to sexual satisfaction and functioning in committed relationships. *The Journal of Sexual Medicine*, 8, 3108-3115.
- Reis, H.T. (2014). Responsiveness: Affective interdependence in close relationships. *Mechanisms of social connection: From brain to group*, 255-271.

- Rubin, J. D., Moors, A., Matsick, J. L., Ziegler, A., & Conley, T. D. (2014). On the margins: Considering diversity among consensually non-monogamous relationships. *Journal for Psychologie*, *22*, 19-37.
- Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of Experimental Social Psychology*, *16*(2), 172-186.
- Rusbult, C. E., Drigotas, S. M., & Verette, J. (1994). The investment model: An interdependence analysis of commitment processes and relationship maintenance phenomena. In D. J. Canary & L. Stafford (Eds.), *Communication and Relational Maintenance* (pp. 115-139). San Diego, CA, US: Academic Press.
- Rusbult, C. E., Martz, J. M., & Agnew, C. P. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships*, *5*, 357-391.
- Seligman, M. E. P., Steen, T., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychology*, *60*, 410-421.
- Sprecher, S. (1994). Two sides to the breakup of dating relationships. *Personal Relationships*, *1*, 199-222.
- Sprecher, S. (2002). Sexual satisfaction in premarital relationships: Associations with satisfaction, love, commitment, and stability. *The Journal of Sex Research*, *39*, 190-196.

- Sprecher, S., & Regan, P. C. (1998). Passionate and companionate love in courting and young married couples. *Sociological Inquiry*, 68, 163-185.
- Stanley, S. M., & Markman, H. J. (1992). Assessing commitment in personal relationships. *Journal of Marriage and Family*, 54(3), 595-608.
- Stein, M. (1989). Gratitude and attitude: A note on emotional welfare. *Social Psychology Quarterly*, 52, 242-248.
- Visserman, M. L., Impett, E. A., Righetti, F., Muise, A., Keltner, D., & Van Lange, P. A. M. (2018). To “see” is to feel grateful? A quasi-signal detection analysis of romantic partners’ sacrifices. *Social Psychological and Personality Science*.
- Watkins, P. C., Scheer, J., Ovnicek, M., & Kolts, R. (2006). The debt of gratitude: Dissociating gratitude and indebtedness. *Cognition & Emotion*, 20, 217-241.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The experiences in close relationship scale (ECR) – Short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88(2), 187-204.
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, 98(2), 222-244.
- Williams, L. A., & Bartlett, M. Y. (2015). Warm thanks: Gratitude expression facilitates social affiliation in new relationships via perceived warmth. *Emotion*, 15(1), 1-5.

APPENDIX A

TABLES

Table 1

Descriptive Statistics and Correlations among Variables in Study 1.

	1	2	3
(1) SCS	--	--	--
(2) Feelings of gratitude	.53**	--	--
(3) Receiving gratitude	.50**	.64**	--
<i>M</i>	46.19	45.49	34.79
<i>SD</i>	9.39	9.01	8.13

Note. ** $p < .01$.

Table 2

Descriptive Statistics and Correlations among Variables in Study 2.

Time 1	1	2	3	4	5	M_{women}	SD_{women}
(1) SCS	.09	.33**	.08	.14	.19*	5.42	0.95
(2) Reports of expressions	.33**	.36**	.40**	.45**	.54**	5.41	0.90
(3) Partner reports of their expressions	.22*	.40**	.36**	.72**	.65**	5.07	1.07
(4) Reports of reception	.29**	.65**	.53**	.42**	.51**	4.90	1.59
(5) Partner reports of their reception	.28**	.71**	.44**	.48**	.42**	5.39	1.10
M_{men}	5.70	5.07	5.41	5.39	4.90		
SD_{men}	0.91	1.06	0.89	1.10	1.58		
Time 2	1	2	3	4	5	M_{women}	SD_{women}
(1) SCS	.16*	.47**	.16	.24*	.24*	5.53	1.10
(2) Reports of expressions	.35**	.49**	.52**	.64**	.57**	5.40	0.93
(3) Partner reports of their expressions	.44**	.51**	.49**	.65**	.71**	5.16	1.06
(4) Reports of reception	.40**	.72**	.55**	.49**	.54**	5.05	1.45

(5) Partner reports of their reception	.30**	.64**	.65**	.53**	.49**	5.30	1.06
<i>M_{men}</i>	5.68	5.17	5.41	5.32	5.07		
<i>SD_{men}</i>	0.94	1.06	0.93	1.06	1.45		
Time 3	1	2	3	4	5	<i>M_{women}</i>	<i>SD_{women}</i>
(1) SCS	.28*	.62**	.32	.40**	.14	5.30	1.15
(2) Reports of expressions	.30*	.18	-.11	.77**	-.02	5.42	1.08
(3) Partner reports of their expressions	.31*	.37**	.18	-.13	.64**	5.25	0.97
(4) Reports of reception	.17	.64**	.45**	.20	-.11	4.85	1.63
(5) Partner reports of their reception	.28*	.53**	.77**	.42**	.20	5.26	1.10
<i>M_{men}</i>	5.58	5.24	5.42	5.26	4.85		
<i>SD_{men}</i>	0.92	0.95	1.07	1.08	1.62		

Note. Descriptive statistics and correlations are presented above the diagonal for women and below the diagonal for men; correlations between partners appear on the diagonal in bold.

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

Table 3

Descriptive Statistics and Correlations among Variables in Study 3

	1	2	3	<i>M</i>	<i>SD</i>
(1) SCS	.20**	.01	.06	45.06	11.83
(2) Gratitude expressed	.11	.36	.33**	8.09	1.21
(3) Gratitude received	.15	.41**	.36	8.02	1.17
<i>M</i>	50.48	7.96	8.04		
<i>SD</i>	9.24	1.04	1.10		

Note. Descriptive statistics and correlations are presented above the diagonal for women and below the diagonal for men; correlations between partners appear on the diagonal in bold.

** $p < .01$.

APPENDIX B

THE SEXUAL COMMUNAL STRENGTH SCALE

Keeping in mind your romantic partner, answer the following questions. Circle one answer for each question on the scale from 1=*not at all* to 11=*extremely* before going on the next question. Your answers will remain confidential.

1. How far would you be willing to go to meet your partner's sexual needs?
2. How readily could you put the sexual needs of your partner out of your thoughts?
3. How high a priority for you is meeting the sexual needs of your partner?
4. How easily could you accept not meeting your partner's sexual needs?
5. How likely are you to sacrifice your own needs to meet the sexual needs of your partner?
6. How happy do you feel when satisfying your partner's sexual needs?

APPENDIX C

THE APPRECIATION IN RELATIONSHIPS (AIR) SCALE

Answer according to how strongly you agree with each item.

1=*strongly disagree*; 7=*strongly agree*.

1. I tell my partner often that s/he is the best.
2. I often tell my partner how much I appreciate her/him.
3. At times I take my partner for granted.
4. I appreciate my partner.
5. Sometimes I don't really acknowledge or treat my partner like s/he is someone special.
6. I make sure my partner feels appreciated.
7. My partner sometimes says that I fail to notice the things that s/he does for me.
8. I acknowledge the things that my partner does for me, even the really small things.
9. I am sometimes struck with a sense of awe and wonder when I think about my partner being in my life.
10. My partner makes sure I feel appreciated.
11. When I am with my partner, sometimes s/he will look at me excitedly and tell me how much s/he appreciate me.
12. My partner often tells me the things that s/he really likes about me.
13. At times my partner takes me for granted.

14. My partner often expresses her/his thanks when I do something nice, even if it's really small.
15. My partner doesn't notice when I do nice things for her/him.
16. My partner makes me feel special.

APPENDIX D

THE COMMUNAL STRENGTH MEASURE

Keeping in mind your romantic partner, answer the following questions. Circle one answer for each question on the scale from 1=*not at all* to 11=*extremely* before going on the next question. Your answers will remain confidential.

1. How far would you be willing to go to visit your partner?
2. How happy do you feel when doing something that helps your partner?
3. How large a benefit would you be likely to give your partner?
4. How large a cost would you incur to meet a need of your partner?
5. How readily can you put the needs of your partner out of your thoughts?
6. How high a priority for you is meeting the needs of your partner?
7. How reluctant would you be to sacrifice for your partner?
8. How much would you be willing to give up to benefit your partner?
9. How far would you go out of your way to do something for your partner?
10. How easily could you accept not helping your partner?

APPENDIX E

POSITIVE AND NEGATIVE AFFECT SCHEDULE

This scale consists of a number of words that describe different feelings and emotions.

Read each item and select the appropriate answer. Indicate to what extent **you feel this way right now, that is, at the present moment.**

1 = not at all, 5 = very much

1. Excited.
2. Enthusiastic.
3. Alert.
4. Inspired.
5. Determined.
6. Distressed.
7. Upset.
8. Scared.
9. Nervous.
10. Afraid.

APPENDIX F
MANIPULATION CHECK

Please respond to the following statements **based on the conversation you just had**.

1 = *do not agree at all*, 9 = *agree completely*

During the conversation, my partner...

1. ...made me laugh.
2. ...made me frustrated.
3. ...made me happy.
4. ...made me worried.
5. ...made me nervous.
6. ...made me sad.
7. ...made me feel optimistic.
8. ...made me feel appreciated.
9. ...made me feel jealous.
10. ...made me excited.

Please respond to the following statements **based on the conversation you just had**.

1 = *do not agree at all*, 9 = *agree completely*

During the conversation, I...

1. ...made my partner laugh.
2. ...made my partner frustrated.
3. ...made my partner happy.
4. ...made my partner worried.
5. ...made my partner nervous.
6. ...made my partner sad.
7. ...made my partner feel optimistic.
8. ...made my partner feel appreciated.
9. ...made my partner feel jealous.
10. ...made my partner excited.

APPENDIX G
DEMOGRAPHICS

1. What sex were you assigned at birth, on your original birth certificate?
 - Male (1)
 - Female (2)

2. How old are you?

3. What is your ethnicity?
 - Asian (1)
 - American Indian or Alaska Native (2)
 - Black or African American (3)
 - Hispanic or Latino/a (4)
 - Native Hawaiian or Other Pacific Islander (5)
 - White or Caucasian (6)
 - Another ethnicity (7)
 - Two or more ethnicities (8)

4. What is your sexual orientation?
 - Straight or Heterosexual (1)
 - Lesbian, gay, or homosexual (2)
 - Bisexual (3)
 - Other (4)
 - Do not know (5)

5. What best describes your relationship with your current romantic partner?
 - Dating casually (1)
 - Dating exclusively (2)
 - Engaged (3)
 - Married (4)