

## THE ROLE OF MINDFULNESS IN ROMANTIC RELATIONSHIP SATISFACTION AND RESPONSES TO RELATIONSHIP STRESS

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*Two studies examined the role of mindfulness in romantic relationship satisfaction and in responses to relationship stress. Using a longitudinal design, Study 1 found that higher trait mindfulness predicted higher relationship satisfaction and greater capacities to respond constructively to relationship stress. Study 2 replicated and extended these findings. Mindfulness was again shown to relate to relationship satisfaction; then, using a conflict discussion paradigm, trait mindfulness was found to predict lower emotional stress responses and positive pre- and postconflict change in perception of the relationship. State mindfulness was related to better communication quality during the discussion. Both studies indicated that mindfulness may play an influential role in romantic relationship well-being. Discussion highlights future research directions for this new area of inquiry.*

Mindfulness is a quality of consciousness that has been promoted by a number of philosophical and spiritual contemplative traditions for ages, but has only recently been defined and empirically examined within a scientific framework. Mindfulness can be defined as an open or a receptive attention to and awareness of what is taking place, both internally and externally, in the present (Brown & Ryan, 2003). Mindfulness is nondeliberative in nature, in that it concerns simple observation without thinking about, comparing, or otherwise evaluating events and experience (Grossman, Niemann, Schmidt, & Walach, 2004). Several authors have suggested that mindfulness may have considerable value for enhancing the quality of romantic relationships. For example, Kabat-Zinn (1993) and Welwood (1996) have suggested that mindfulness promotes attunement, connection, and closeness in relationships. The receptive attentiveness that defines mindfulness may promote a greater ability or willingness to take interest in the partner's thoughts, emotions, and welfare. Kabat-Zinn (1993) has also theorized that mindfulness leads people to experience an enhanced ability to approach stressful events as challenges instead of threats. Relatedly, Boorstein (1996) has argued that mindfulness promotes an

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ability to witness thought and emotion so as not to react impulsively and destructively to them. This scholarship suggests that mindfulness may (a) promote interaction styles that support healthy relationship functioning and (b) generally enhance romantic relationship quality. The present research was designed to examine both of these possibilities.

Several pieces of evidence highlight the positive potential that the heightened attention and awareness that defines mindfulness may have for interpersonal relationships. Research by Bavelas, Coates, and Johnson (2000, 2002) has emphasized the importance of attentive, active listening for successful communication. The antithesis of present-centered communication has also been studied in the form of “stonewalling” and “defensiveness,” two of what Gottman (1994) has termed the “Four Horsemen of the Apocalypse” threatening the death of marital relationships. The possibility that mindfulness promotes healthy romantic relationship functioning has also been supported by recent studies examining the efficacy of interventions designed to enhance mindfulness skills. In a randomized, wait-list controlled study of an 8-week mindfulness-based relationship enhancement program with nondistressed couples, Carson, Carson, Gil, and Baucom (2004) found that the intervention favorably influenced couples’ relationship satisfaction, closeness, acceptance of the partner, relationship distress, and other relationship outcomes. The intervention also positively impacted individual well-being. In an 8-week longitudinal study of a mindfulness-based stress reduction program, Shapiro, Schwartz, and Bonner (1998) found that increased levels of mindfulness were associated with an increase in self-reported empathy, a characteristic that is particularly likely to influence the maintenance of relationships, predict positive adaptive behaviors, and ultimately lead to relationship satisfaction (Davis & Oathout, 1987, 1992; Hansson, Jones, & Carpenter, 1984).

It is not clear from past research whether mindfulness itself is an active ingredient in promoting positive relationship outcomes, but Carson et al. (2004) found that greater practice of mindfulness on a given day predicted improved relationship happiness, stress coping efficacy, and lower relationship-specific and overall stress. Other research supports the relation of mindfulness itself to a number of positive interpersonal behaviors. Brown and Ryan (2003, 2004) showed that mindfulness was positively related to, or predictive of, openness, relatedness, and interpersonal closeness. Brown and Ryan (2003) also found an association between mindfulness and components of emotional intelligence; these, in turn, have been associated with better social skills and perspective taking, cooperative response patterns, and marital partner satisfaction (Schutte, Malouff, & Bobik, 2001). Reiter (2003) found that mindfulness was positively correlated with intimacy and capitalization in romantic couples, and inversely related to anxious/ambivalent attachment to the partner. Increasingly, researchers have come to recognize that healthy romantic relationships are facilitated by individual psychological well-being (Epstein & Baucom, 2002), and research has shown that mindfulness is positively associated with a number of potential “intrapersonal supports” for healthy relationships, including positive affectivity, self-esteem, and life satisfaction, and inversely related to negative affectivity, anxiety, anger-hostility, neuroticism, depressive symptoms, and stress reactivity (Brown, 2004; Brown & Ryan, 2003).

Together, these initial findings offer support for several tests of the role of mindfulness in healthy romantic relational adjustment and functioning. First, mindfulness may be associated with general romantic relationship satisfaction. This is supported by correlational and intervention research showing that more mindful people view their romantic relationships more positively in a variety of ways. The second way in which mindfulness may play a role in relational adjustment is that mindful people may have relationships that are lower in emotional and behavioral negativity. The positive relation between mindfulness and positive affectivity, and the inverse relation with negative affectivity, suggests that mindful individuals in a romantic partnership may be less likely to experience the disproportionate dominance of negative affectivity that is predictive of couple discord and dissolution (Carrere & Gottman, 1999; Gottman & Levenson, 1992). The prospect that mindfulness may predict less negativity in a relationship is further supported by the association of mindfulness with lower levels of anxiety, since anxiety

consistently predicts negativity in married couples (Caughlin, Huston, & Houts, 2000). The negative association between mindfulness and both anxiety and anger-hostility found in past research suggests that mindfulness may predict not only less negative emotional *experience*, but also lower levels of *expressed* negativity, reflected in less verbal aggression, overt negativity, and conflictual communication patterns. These behaviors are other primary predictors of relationship dissatisfaction and dissolution (Carrere & Gottman, 1999). Finally, it could also be expected that if more mindful individuals experience less negativity in their romantic relationships, their perceptions of their partners and their relationships should be more positive than for those whose interactions are more strife-torn.

The present research examined the role of mindfulness in romantic relationship satisfaction and in responses to relationship stress in two studies. Study 1 was designed to test two hypotheses. Based on past research, we hypothesized that mindfulness would be positively related to general romantic relationship satisfaction and to indicators of adaptive and relationship-enhancing response to relationship stress. Study 2 was designed to replicate results pertaining to the first hypothesis and to more closely examine the role of mindfulness in response to relationship stress. A relationship conflict discussion was introduced, and cognitive, emotional, and behavioral responses were examined. We hypothesized that higher levels of mindfulness would be related to less negative emotional experience, and in particular, less anxiety and anger-hostility; positive (or at least less negative) change in perception of the partner and relationship following the conflict discussion; and a more benign pattern of communication during the discussion.

## STUDY 1

The incipient research on mindfulness in relationships indicates that this quality of consciousness is related to a variety of positive interpersonal qualities and experiences in both nonromantic and romantic relationship contexts. The relation of mindfulness to romantic relationship satisfaction has not been explicitly tested, however, and this first study did so. This test is important because relationship satisfaction is widely considered a key indicator of the well-being of romantic relationships and a predictor of relationship longevity. To examine the relation of mindfulness to the capacity to deal adaptively and productively with relationship stress, two indicators of this capacity were chosen: dispositional *self-control* and *accommodation*. As studied here, self-control refers to the ability to override or change inner responses, and to interrupt and refrain from acting on undesired behavioral tendencies (Tangney, Baumeister, & Boone, 2004). A considerable body of research supports the role of self-control in promoting positive social interactions and relationship success (see Tangney et al., 2004, for review). Related to self-control is accommodation—the willingness to inhibit tendencies to act destructively, and instead to respond constructively, when a romantic partner has acted in a way that is potentially destructive to the relationship (Finkel & Campbell, 2001; Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991).

The present study was conducted with dating college students using a short-term longitudinal design, in which measures of all relevant constructs were collected twice, 10 weeks apart. We tested our hypotheses concerning the relation of mindfulness to relationship satisfaction and adaptive relationship stress response capacity both concurrently and prospectively.

## METHOD

### *Participants*

Dating college students at a large southeastern U.S. university were recruited to participate in exchange for extra course credit. Eighty-nine participants (73% women) were enrolled in the study; none of them were members of the same dyad. Seven participants did not complete the Time 2 measures, leaving 82 participants for analyses of the Time 2 data. As assessed at Time 1, the average age of the participants was 19.3 years (range 18–23 years). Most (88%) were

Caucasian, 6% were African American, 2% were Asian American, and 6% self-identified as having an "other" racial or ethnic origin. The majority of participants (87%) were "dating steadily" while another 8% were "dating regularly"; the remainder was "dating casually" (2%) or "engaged/married" (3%). The average length of the romantic relationships was 18.6 months (range 3–85 months). All but one participant indicated that their partnership was an exclusive one. Finally, participants reported seeing their partners, on average, 17.4 days in each month (range 0–31 days).

### *Measures and Procedures*

The 15-item dispositional version of the *Mindful Attention Awareness Scale* (MAAS; Brown & Ryan, 2003) was used to measure trait mindfulness (sample  $\alpha = .83$ ; this and all reported sample  $\alpha$ 's are from the Time 1 data). Relationship satisfaction was measured with two scales. The well-known, 32-item *Dyadic Adjustment Scale* (DAS; Spanier, 1976) was modified slightly here for use with young, unmarried adults ( $\alpha = .85$ ). The Satisfaction subscale of the *Investment Model Scale* (IMS; Rusbult, Martz, & Agnew, 1998) was also used ( $\alpha = .92$ ). Participants responded to five face-valid items on a 9-point scale (0 = *do not agree at all* to 8 = *agree completely*).

*Self-control* was measured with the brief, 13-item version of the Self-Control Scale (SCS; Tangney et al., 2004;  $\alpha = .84$ ). A sample item is, "I have a hard time breaking bad habits." Using a 5-point scale (1 = *not at all like me* to 5 = *very much like me*), higher scores reflect lower self-control. *Accommodation* was measured with a 16-item scale ( $\alpha = .85$ , Rusbult et al., 1991) consisting of four subscales; two refer to positive or constructive responses to relational conflict (voice and loyalty) and two refer to negative or destructive responses to relational conflict (exit and neglect). Sample items include: "When my partner and I are angry with one another, I suggest a compromise solution" (*voice*); "When we have problems in our relationship, I patiently wait for things to change" (*loyalty*); "When I'm angry at my partner, I threaten to break up" (*exit*); and "When I'm upset with my partner, I sulk rather than confront the issue" (*neglect*). All items were assessed with a 9-point scale (0 = *never* to 8 = *constantly*).

## RESULTS AND DISCUSSION

Table 1 presents descriptive statistics on the psychological variables measured in the study. All average scale scores were comparable to those seen in published research with college student samples, and all showed wide variability in response. Relationship satisfaction scores, as measured by the DAS and IMS, indicated that on average participants were satisfied with their romantic relationships. Table 1 also displays the correlations between mindfulness at Times 1 and 2 and the remaining variables at Times 1 and 2. At Time 1, mindfulness was positively related with both measures of relationship satisfaction, and with both self-control and accommodation. At Time 2, the same significant relations were found. Finally, Time 1 mindfulness predicted both measures of relationship satisfaction and self-control, but not accommodation, at Time 2.

To test whether Time 1 mindfulness would continue to be related to the Time 1 and Time 2 indicators of relationship satisfaction and stress response when demographic and relationship characteristics were controlled, multiple regressions were performed. After inclusion of the control variables that showed meaningful variation in this sample, namely, gender, length of relationship, and days per month spent together, mindfulness significantly predicted measures of relationship satisfaction at Time 1 (DAS  $\beta = .37, p < .001$ ; IMS  $\beta = .34, p < .001$ ), and at Time 2 (DAS  $\beta = .28, p < .01$ ; IMS  $\beta = .25, p < .05$ ). Time 1 mindfulness also predicted self-control at Time 1 ( $\beta = -.53, p < .0001$ ) and Time 2 ( $\beta = -.54, p < .0001$ ). Time 1 mindfulness remained significantly related to Time 1 accommodation ( $\beta = .33, p < .01$ ), and marginally predicted Time 2 accommodation ( $\beta = .21, p < .07$ ).

Table 1  
*Descriptive Statistics on Psychological Variables and Correlations with Mindfulness at Time 1 and Time 2 (Study 1)*

Variable	<i>M</i>	<i>SD</i>	Range	<i>r</i>	
				MAAS <sub><i>t</i>1</sub>	MAAS <sub><i>t</i>2</sub>
<i>Time 1</i>					
Trait MAAS mindfulness	3.99	0.63	2.73–5.47	–	–
DAS relationship satisfaction	121.70	12.19	64.00–144.00	0.41****	–
IMS relationship satisfaction	34.61	5.48	8.00–40.00	0.34***	–
SCS self-control	38.71	8.81	16.00–61.00	–0.52****	–
Accommodation	17.34	15.73	–36.00–54.00	0.34***	–
<i>Time 2</i>					
Trait MAAS mindfulness	4.03	0.58	2.80–5.47	0.73****	–
DAS relationship satisfaction	122.75	10.29	90.00–139.00	0.24*	0.33**
IMS relationship satisfaction	34.87	4.71	17.00–40.00	0.22*	0.29**
SCS self-control	38.01	8.27	18.00–55.00	–0.54****	–0.60****
Accommodation	20.88	14.13	–20.00–47.00	0.15	0.38***

*Note.* *N* = 89 at Time 1; *N* = 82 at Time 2. MAAS = Mindful Attention Awareness Scale; DAS = Dyadic Adjustment Scale; IMS = Investment Model Scale; SCS = Self-Control Scale; *t*1 = Time 1; *t*2 = Time 2.  
 \**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001, \*\*\*\**p* < 0.0001.

Finally, we also examined whether mindfulness would predict relationship satisfaction when prior levels of satisfaction were controlled, as this would provide a stringent test of the unique role of mindfulness in predicting a key indicator of relationship quality. In multiple regression analyses in which the Time 2 DAS and IMS satisfaction measures were each regressed on the same satisfaction measure and mindfulness at Time 1, the effect of mindfulness on later relationship satisfaction became nonsignificant, both *ps* > .05. However, it is noteworthy that across the relatively brief, 10-week time span, relationship satisfaction scores changed very little, leading to relatively high correlations between the two time points (DAS *r* = .81, *p* < .0001; IMS *r* = .69, *p* < .0001). Thus, there was little variation to be explained in Time 2 satisfaction by other potential predictors. A better test of the unique role of mindfulness in predicting relationship satisfaction would likely be to use measures of satisfaction that are more widely separated in time, to allow for greater variability from one time point to the other.

However, these results provide some preliminary support for the hypotheses that mindfulness is related to greater satisfaction in romantic relationships, and to a greater capacity to manage the stresses that are often experienced in intimate relationships. On this latter point, because this capacity was assessed dispositionally in this study, further research is needed to examine whether more mindful individuals are better able to regulate their behavior in romantic relationship-specific stressful encounters.

## STUDY 2

This study had two primary purposes: First, we sought to replicate the basic finding of Study 1 showing that more mindful persons who are romantically involved are better satisfied

with their romantic relationships. Second, we attempted a more thorough test of our hypotheses concerning the role of mindfulness in response to relationship stress. The present study used a laboratory-based, prospective design to examine the effect of mindfulness on stress responses to relationship conflict in three domains—emotion, cognition, and overt behavior. Through the induction of conflict, we attempted to show that mindfulness is associated with lower levels of negative affective experience in the conflict context, with more positive (or at least less negative) perceptions of one's partner and the relationship after conflict, and with lower levels of overt negativity in the conflict discussion, as revealed through verbal and nonverbal behaviors. This study served as an extension of the first study, not only through a closer examination of the relations of interest, but also by including both members of each dyad. This allowed for analyses of the effects of each partner on his or her own and the other partner's experience and behavior.

## METHOD

### *Participants*

Sixty heterosexual couples were recruited to participate in the study using advertisements posted on the campus of a small northeastern U.S. university. To ensure that couples would be able to generate salient relationship conflict topics, inclusion criteria stipulated that couples had to have been dating for at least 3 months. Two other criteria were set for purposes of other research (Barnes, 2004): Both members of the couple had to be 18–25 years of age to control for differences in cardiovascular reactivity because of age (Blascovich, 2000), and couples were excluded if a member had cardiovascular disease, endocrine disorder, clinical obesity, or used cardiovascular or psychoactive medication. Three couples were excluded from all analyses for failing to meet study criteria, leaving a final sample of 57 couples.

The average participant was 20.05 years old (range 18–25 years). The average length of the dating relationships was 13.48 months (range 4–38 months). Members of most couples (82%) considered their relationship “serious” while 15% reported that it was “steady” and 4% regarded it as “casual.” Each participant was compensated with his or her choice of \$5 or extra course credit, coupons/gift certificates to be redeemed at local businesses, and entry into a lottery.

### *Procedure*

*Pre-session instructions and preliminary questionnaire administration.* Couples were asked to refrain from speaking with one another for the 6 hr prior to the session to ensure that their laboratory interactions would be novel. After obtaining consent in the laboratory, the members of each couple were taken to separate rooms to complete all demographic, relationship background, and trait measures (see *Self-Report Measures* below).

*Interaction setup and first briefing.* Each couple was then reunited to begin a five-phase interaction sequence. This sequence generally followed the interaction procedures used by Gottman and others for the study of dating and marital couple conflict (e.g., Gottman, Coan, Carrere, & Swanson, 1998; Fritz, Nagurny, & Helgeson, 2003; Levenson & Gottman, 1983). Participants were seated in chairs placed at a 45° angle to one another. Couples were informed that they would have two videotaped discussions. They were then briefed on the format of the *Events of the day discussion* (see phases 1 and 2 below). They were asked to try to ignore the video cameras and to act as if they were having a conversation at home.

*Interaction phase 1 (10 min).* For this first phase of the *Events of the day discussion*, participants were instructed to sit quietly and relax. They were not permitted to talk with one another, but were free to read nonstimulating magazines. This phase was designed to facilitate acclimatization to the laboratory setting.

*Interaction phase 2 (10 min).* Participants were then instructed via intercom to discuss the events of their current day. During the briefing they were told that if discussing the events of

their day did not take the entire period or if they had already discussed the events of their day before arriving for the session, they could have any other event-related conversation that they hadn't already had (e.g., plans for the evening). This phase provided an opportunity for participants to become accustomed to having a natural conversation in the laboratory.

*Preconflict mood assessment, relationship conflict topics generation, and second couple interaction briefing.* Participants next completed measures assessing their current (preconflict discussion) anger-hostility and anxiety. They then generated two relationship conflict topics (cf., Fletcher & Fitness, 1990). Participants were instructed to individually think of, and write down, two topics that they considered major issues in their relationship, or over which they typically experienced conflict. They were asked to select topics that they would be willing to discuss in the lab and to order them so that the most problematic issue was listed first. If either participant had not generated two problem topics after 3 min, they were asked to refer to a list of common problem areas for romantic couples to help generate ideas. If they did choose a topic from the list, they were asked to make it as specific to their relationship as possible.

Once both participants had two conflict topics, they were asked to compare their highest-rated problem topic. If they were not the same and each partner was willing to discuss both topics, these topics were used in the couple conflict discussion. If the first topics were the same or closely related, this topic was used as one of the two topics for the conflict discussion. Participants who listed the same first topic were then asked to compare their second topics. If these were the same, then this problem topic was used as the second problem for the conflict discussion; but if the topics were different and the participants were willing to discuss them, one of these two topics was randomly chosen by the experimenter. This sophisticated topic selection procedure helped to ensure that each member of the couple had a vested interest in at least one conflict topic (e.g., Sanders, Halford, & Behrens, 1999). Following discussion topic selection, participants were briefed on the format of phases 3, 4, and 5.

*Interaction phase 3 (5 min).* Participants were instructed to sit quietly and relax without speaking. This phase permitted an opportunity to consider the relationship conflict issues and prepare for the discussion.

*Interaction phase 4 (10 min).* Participants were instructed via intercom to begin discussing their first relationship conflict topic. During the briefing, they had been told to discuss their first problem topic for 5 min, and to try to solve the problem or work toward a solution during this time. If they reached a solution before the 5-min period was over, they were asked to discuss how they planned to implement this solution. They had been reminded once again to act as naturally as possible, as if they were having a conversation at home. After subjects had discussed their first problem topic for 5 min, they were instructed via intercom to discuss their second problem topic for 5 min. During the briefing they were asked to follow the same discussion procedure as for the first relationship conflict topic.

*Interaction phase 5 (5 min).* Participants were signaled via intercom to sit quietly and relax without speaking. This final period served as a recovery phase.

*Postconflict discussion measures and debriefing.* Participants were separated to complete the postconflict discussion measures (see *Post-conflict discussion measures* below). The couple was then reunited, debriefed, and given their participation incentives. The experimenter emphasized that all relationships have problems and disagreements from time to time and that points of contention can be a healthy feature of a strong, committed relationship. The experimenter ensured that both partners felt good about their experience in the study (cf., Simpson, Rholes, & Phillips, 1996).

### *Self-Report Measures*

*Trait and relationship background measures.* As in Study 1, dispositional mindfulness was measured using the *Mindful Attention Awareness Scale* (MAAS; Brown & Ryan, 2003) and relationship satisfaction was measured using the 32-item *Dyadic Adjustment Scale* (DAS; Spanier,

1976). Each member of the couple also completed demographic (age, gender) and relationship background measures—specifically, the length of the relationship and its nature: “casual,” “steady,” “serious,” or “engaged to be married.”

*Preconflict discussion measures.* Subscales from the *Profile of Mood States* (POMS; McNair, Lorr, & Droppleman, 1971) were used to assess subjects’ current levels of anxiety (9 items) and anger-hostility (12 items) on a 5-point scale (*not at all* to *extremely*) before beginning the problem discussions.<sup>1</sup>

*Postconflict discussion measures.* The anger-hostility and anxiety subscales of the POMS were used to reassess current, postconflict emotions. Three measures (Simpson et al., 1996) assessed changes in perception of the partner and relationship from pre- to postconflict discussion. Participants were asked to “Think about how you felt about your dating partner and your relationship just BEFORE the conflict discussion you just had compared with how you feel NOW.” Then, following this question, “How much \_\_\_\_\_ did you feel toward your partner or your relationship after the conflict discussion compared to before the discussion?” a list of items was rated on a 9-point scale (*much less* to *much more*). The items tapped perceived change in three domains: (a) felt love or commitment (4 items), (b) respect given to and received from the partner (2 items), and (c) degree of felt support and open communication toward the partner (4 items).

Mindfulness during the problem discussion was assessed with the 5-item, state MAAS (Brown & Ryan, 2003). Minor wording changes were made to refer to the discussion (e.g., “I was finding it difficult to stay focused on what was happening in the discussion”). Finally, a single item (“To what extent was the topic you discussed a major problem in your relationship?”) assessed the severity of the relationship conflict (Simpson et al., 1996). Table 2 presents, for males and females separately, the internal consistency estimates for all multi-item scales.

#### *Videotape Coding*

Videotapes from the two cameras were edited to form one split screen picture. The conflict discussions were then rated using five codes from the System for Coding Interactions in Dyads (SCID; Malik & Lindahl, 2004). The SCID assesses global aspects of communicative and affective functioning for each member of a dyad. Each conflict discussion was coded independently for two positive and three negative interaction patterns: Problem-solving communication (openly expressing feelings and thoughts in a constructive manner), support (listening attentively and being attuned to the partner’s needs), withdrawal (avoiding the interaction or discussion), negativity (display of tension, irritation, and anger), and verbal aggression (hostile and aggressive remarks directed toward the partner). All ratings were made on a 5-point scale (*very low* to *high*). A single, trained rater coded male and female behaviors for 52 couples. Technical problems prohibited the coding of the remaining five couple conflict interactions. Using a second trained rater, inter-rater reliability was assessed on a random sample of  $n = 12$  (23%) of the couple conflict discussions. As shown in Table 2, inter-rater reliability was adequate for all coded behaviors.

## RESULTS

Descriptive statistics on all self-report measures and video-coded variables are presented in Table 2 for both males and females. Trait MAAS scores for males and females were comparable to published norms for college students (Brown & Ryan, 2003). Prediscussion levels of anger-hostility were low, although males showed higher levels on this variable than females. Levels of video-coded verbal aggression, negativity and conflict, and withdrawal were also low relative to the two positive behavioral codes. The internal consistency levels for all scales (Cronbach’s  $\alpha$ ) were at acceptable levels. Most video code inter-rater reliabilities were comparable to SCID manual reports (Malik & Lindahl, 2004). Many of the identical measures collected from male and female members of the couple were correlated (see Table 2).



Table 2  
*Descriptive Statistics on Self-Report Measures and Video Codes (Study 2)*

	Male			Female			Male–female	
	M	SD	$\alpha$	M	SD	$\alpha$	paired <i>t</i>	<i>r</i>
<i>Self-reported variables</i>								
DAS relationship satisfaction	109.99	13.49	0.92	112.62	11.29	0.85	1.47	0.53****
Trait MAAS mindfulness	4.27	0.81	0.89	4.46	0.68	0.86	-1.26	-0.17
State MAAS mindfulness	4.87	0.80	0.73	4.89	0.94	0.77	-0.09	0.18
Pre-POMS anxiety	5.44	3.61	0.76	6.18	4.15	0.78	-1.03	0.16
Pre-POMS anger-hostility	2.18	5.86	0.96	1.10	4.01	0.97	2.07*	0.49****
Post-POMS anxiety	5.21	4.95	0.89	5.35	4.93	0.85	-0.25	0.26*
Post-POMS anger-hostility	2.91	7.24	0.94	2.64	7.95	0.98	1.02	0.52****
Post-love/commitment	20.95	3.93	0.92	21.77	4.16	0.92	-1.10	0.02
Post-respect	10.51	2.87	0.94	11.26	2.86	0.92	-1.61	0.24 <sup>+</sup>
Post-support	21.32	4.59	0.83	21.60	4.74	0.91	-0.37	0.26*
Problem rating	5.28	1.87	-	5.60	2.14	-	-1.22	0.53****
<i>Video-coded variables</i>								
Verbal aggression	1.24	0.66	0.92	1.35	0.73	0.74	-1.35	0.68****
Negativity and conflict	1.73	0.79	0.87	1.88	1.03	0.81	-1.39	0.65****
Withdrawal	1.93	0.77	0.70	1.89	0.92	0.63	-0.03	0.37**
Problem-solving communication	3.58	1.20	0.93	3.58	1.12	0.78	0.00	0.81****
Support	3.68	1.23	0.88	3.64	1.17	0.77	0.35	0.78****

*Note.* *N* = 57 couples.  $\alpha$  = internal consistency (Cronbach's alpha);  $\alpha$ s for video-coded variables = inter-rater reliability; *paired t* = male–female difference in mean scale scores; *r* = male–female correlation of scale scores; DAS = Dyadic Adjustment Scale; MAAS = Mindful Attention Awareness Scale; Pre- = preconflict discussion; Post- = postconflict discussion; POMS = profile of mood states; love/commitment = perceived change in love/commitment measure; respect = perceived change in respect measure; support = perceived change in support measure; problem rating = extent that topic was major issue in couple relationship.

+*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\*\**p* < .0001.

### *Mindfulness and Romantic Relationship Satisfaction*

As predicted, trait mindfulness was positively correlated with romantic relationship satisfaction, as measured by the DAS,  $r = .37, p < .0001$ .

### *Multilevel Modeling of Interaction Responses*

Data obtained from each member of a couple have an inherent hierarchical structure, in which the lower level unit of analysis (i.e., individual actor and partner variables) is nested within a higher level of analysis (i.e., the couple). Thus, for the analyses of all couple interaction data, we used an Actor–Partner Interdependence Model (APIM; e.g., Campbell & Kashy, 2002). This multilevel modeling (MLM) approach allowed us to test the effects of actor and partner variables independently even though, in many cases, they were significantly correlated (see Table 2). In these models, “actor” effects refer to the relation between an individual’s predictor scores on their own outcome(s); “partner” effects refer to association between the

relational partner's scores and the scores of the other member of the dyad. The MIXED procedure in SAS was used to estimate all models (SAS Institute, 1992, 1997). All models controlled for gender, mindfulness  $\times$  gender interactions, and the seriousness of the relationship as defined by both members of the couple, because preliminary analyses showed that these variables had significant predictive effects.

#### *Mindfulness and Emotional Stress Responses*

We predicted that higher trait levels of mindfulness would be related to a less severe emotional stress response, which was operationalized as lower postconflict anxiety and anger-hostility. Multilevel models tested the effects of the predictors on each outcome separately. Table 3 displays the results of the MLM on both postconflict discussion emotion outcomes. The nature of the relationship, as defined by the actor, was significantly related to anger-hostility, such that when the relationship was defined as more serious, the actor experienced less hostility and aggression ( $p < .001$ ). Additionally, a partner mindfulness  $\times$  partner gender interaction was found on the anger-hostility outcome, such that when females were higher in mindfulness, males experienced less anger and hostility ( $p < .05$ ). Most pertinent to the present research, trait-level actor mindfulness predicted lower levels of postconflict discussion anger-hostility and postconflict discussion anxiety ( $[p < .01$  and  $p < .05$ , respectively]; see Table 3). A comparison of the covariance parameter estimates (Singer, 1998) between these models and models including all predictors except actor mindfulness showed that actor mindfulness uniquely accounted for 15% of the explainable between-subjects variation in anger-hostility, and 12% of the explainable between-subjects variation in anxiety.

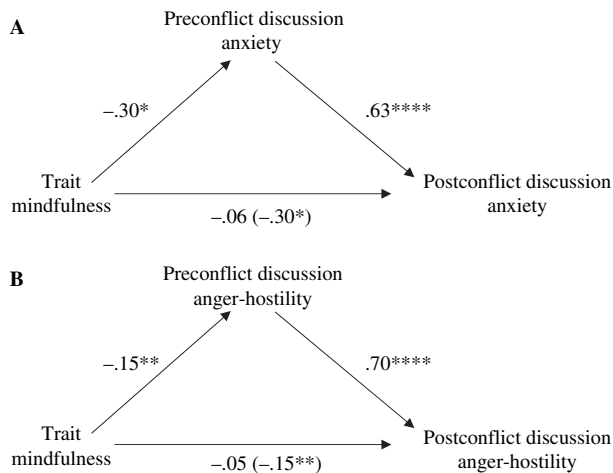
Further analyses were conducted in an attempt to explain the predictive relation between actor trait mindfulness and the two postdiscussion emotion outcomes. Specifically, we tested the intervening role of preconflict anxiety and preconflict anger-hostility in the trait mindfulness–postconflict mood relations. Following the procedure described by Baron and Kenny

Table 3  
*Multilevel Model Results on Postconflict Discussion Anxiety and Anger-Hostility (Study 2)*

Predictor	Estimate	
	Postconflict discussion anxiety	Postconflict discussion anger-hostility
Trait MAAS mindfulness, actor	−0.30*	−0.15**
Trait MAAS mindfulness, partner	−0.23 <sup>+</sup>	−0.08
Nature of relationship, actor	−0.39	−0.28***
Nature of relationship, partner	−0.16 <sup>+</sup>	−0.01
Gender	−0.04	0.01
MAAS mindfulness, A. $\times$ gender, A.	−0.14	−0.01
MAAS mindfulness, P. $\times$ gender, P.	0.03	0.10*

*Note.*  $N = 57$  couples. Values are nonstandardized estimates. MAAS = Mindful Attention Awareness Scale; nature of relationship, actor = actor-defined nature of the relationship; nature of relationship, partner = partner-defined nature of the relationship; mindfulness, A.  $\times$  gender, A. = actor trait mindfulness by actor gender interaction; mindfulness, P.  $\times$  gender, P. = partner trait mindfulness by partner gender interaction.

<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



*Figure 1.* Multilevel model results examining (A) preconflict discussion anxiety and (B) anger-hostility as intervening variables between trait mindfulness and postconflict discussion mood states (Study 2). *Note.* Values are nonstandardized estimates. Values in parentheses are estimates before entry of the intervening variable.  $*p < .05$ ,  $**p < .01$ ,  $****p < .0001$ .

(1986), we found that actor trait mindfulness significantly predicted preconflict anxiety ( $p < .05$ ). Then, when preconflict anxiety was included in the trait mindfulness–postconflict anxiety model, the relationship between actor trait mindfulness and postconflict anxiety was no longer significant (see Figure 1, part A). Using the same procedure, we found that actor trait mindfulness significantly, inversely predicted preconflict discussion anger-hostility ( $p < .01$ ). When preconflict anger-hostility was included in the trait mindfulness–postconflict anger-hostility model, the relation between actor trait mindfulness and postconflict anger-hostility dropped to nonsignificance (see Figure 1, part B).

In order to determine whether the drop in the effect sizes between trait mindfulness and postconflict discussion anxiety and anger-hostility were significant, we used two methods recommended by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002).<sup>2</sup> In the first method, the product of the two regression coefficients involved in the intervening effect is divided by the regression coefficient  $\times$  standard error product from both regression models. This provides a  $z'$  value that is then compared to critical values of its empirical sampling distribution.<sup>3</sup> This comparison determines whether the intervening effect is significant; that is, that the direct effect is significantly reduced when the intervening variable is included in the multilevel model. The analyses using this method indicated that both preconflict discussion anxiety and preconflict discussion anger-hostility were significant intervening variables ( $z' = -2.59$ ,  $p < .01$ ;  $z' = -3.21$ ,  $p < .01$ , respectively).

In the second method, each regression coefficient of the intervening effect is divided by its standard error (providing a  $z$  score) and then these two values are multiplied together, resulting in a value labeled  $P$ . The  $P$  value is then compared to critical values in the sampling distribution of the product of two normal random variables (Springer & Thompson, 1966). This method confirmed that preconflict discussion anxiety and anger-hostility were significant intervening variables in the relation between actor trait mindfulness and postconflict emotional stress response ( $P = -13.32$ ,  $p < .01$  for anxiety;  $P = -22.66$ ,  $p < .01$  for anger-hostility). Both of the MacKinnon et al. (2002) analyses indicated that the predictive relation between actor trait mindfulness and postconflict emotional stress response was explained by the fact

that those higher in trait mindfulness had lower levels of preconflict anxiety and anger-hostility.<sup>4</sup>

*Mindfulness and Change in Perception of Partner and Relationship*

We predicted that higher levels of mindfulness would predict positive changes (or at least less negative changes) in pre- and postconflict changes in perception of the partner and the relationship, and specifically in love and commitment, respect, and support. Multilevel models were again constructed. As in the previous analyses, we controlled for the effects of actor- and partner-defined seriousness of the relationship, gender, and interactions between actor mindfulness and actor gender, and partner mindfulness and partner gender. These control variables were included in the models based on preliminary analyses showing significant effects.

Table 4 displays the results of MLM for all three perception change outcomes. Actor trait mindfulness significantly and positively predicted perceived change in love and commitment ( $p < .05$ ; 13% of explainable between-subjects variation accounted for) and also positively predicted perceived change in support at a trend level ( $p < .10$ ). There was no main effect for actor trait mindfulness on the respect outcome, but there was an actor mindfulness  $\times$  actor gender interaction effect for respect, such that more mindful females perceived a greater positive change in respect for and from their partners ( $p < .05$ ; explaining 3% of between-subjects variation). The same actor mindfulness  $\times$  actor gender interaction effect was marginally significant for support, such that female mindfulness predicted an increase in perceived support from their partner ( $p < .10$ ; explaining 2% of between-subjects variation). Finally, the actor-defined seriousness of the relationship positively predicted the three positive change outcomes, although the estimate for support was only significant at a trend level (see Table 4).

Following the Baron and Kenny (1986) procedure, we again tested the role of intervening variables in explaining the predictive relation between trait mindfulness and perceived change in love/commitment. Preconflict anxiety and anger-hostility were not related to postconflict love/commitment in preliminary analyses, and so were not further considered. However, trait

Table 4  
*Multilevel Model Results on Postconflict Discussion Perceived Changes in Partner and Relationship (Study 2)*

Predictor	Love/commitment estimate	Respect estimate	Support estimate
Trait MAAS mindfulness, actor	1.00*	0.35	0.99 <sup>+</sup>
Trait MAAS mindfulness, partner	0.30	0.44	0.71
Nature of relationship, actor	2.22*	1.77**	1.87 <sup>+</sup>
Nature of relationship, partner	-0.02	0.86	1.33
Gender	-0.30	-0.37	-0.12
MAAS mindfulness, A. $\times$ gender, A.	-0.50	-0.68*	-0.99 <sup>+</sup>
MAAS mindfulness, P. $\times$ gender, P.	0.86 <sup>+</sup>	0.03	0.11

*Note.*  $N = 57$  couples. Values are nonstandardized estimates. MAAS, Mindful Attention Awareness Scale; nature of relationship, actor = actor-defined nature of the relationship; nature of relationship, partner = partner-defined nature of the relationship; mindfulness, A.  $\times$  gender, A. = actor trait mindfulness by actor gender interaction; mindfulness, P.  $\times$  gender, P. = partner trait mindfulness by partner gender interaction.  
<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ .

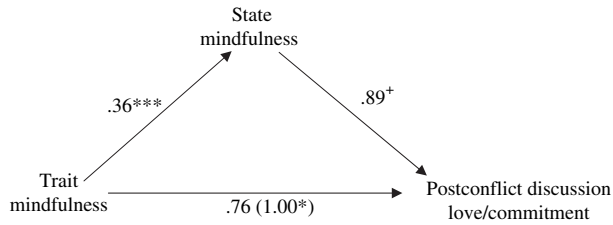


Figure 2. Multilevel model results examining state mindfulness as an intervening variable between trait mindfulness and postconflict discussion perceived change in love/commitment (Study 2). Note. Values are nonstandardized estimates. Value in parentheses is the estimate before entry of the intervening effect of state mindfulness. + $p < .10$ , \* $p < .05$ , \*\*\* $p < .001$ .

mindfulness positively predicted state mindfulness ( $p < .001$ ), and when state mindfulness was included in a model of the relationship between trait mindfulness and postdiscussion love/commitment, state mindfulness significantly predicted postdiscussion love/commitment at a trend level and the relation between trait mindfulness and postdiscussion love and commitment dropped to nonsignificance, suggesting that state mindfulness helped to explain the relationship between trait mindfulness and postdiscussion love and commitment (see Figure 2). Once again, we used the methods recommended by MacKinnon et al. (2002) to test the significance of this intervening effect. Both methods indicated that state mindfulness was a significant intervening variable in the relation between trait mindfulness and love/commitment ( $z' = 1.68, p < .01; P = 6.63, p < .01$ ).

We also examined the role of state mindfulness in explaining the effect of actor, and specifically, female, trait mindfulness on perceived changes in relational respect and support. When actor and partner state mindfulness were included in the previous MLM showing the actor mindfulness  $\times$  actor gender interaction effect on postconflict respect, actor state mindfulness was a significant predictor ( $b = .91, p < .01$ ), and the actor trait mindfulness  $\times$  actor gender interaction effect remained significant ( $b = -.83, p < .05$ ). The same pattern of results was seen when actor and partner state mindfulness terms were included in the model examining perceived change in support. Actor state mindfulness was again predictive ( $b = 1.22, p = .05$ ), as was the actor trait mindfulness  $\times$  actor gender interaction ( $b = -1.14, p < .05$ ). Together, these results indicate that higher levels of actor state mindfulness during a conflict discussion were a consistent predictor of positive (or at least less negative) changes in love and commitment, respect, and support following the conflict discussion, although the latter two results were found only for the female members of the couples.

#### Mindfulness and Communication Quality

It was hypothesized that higher levels of mindfulness would predict better communication quality, operationalized as less negative communication behaviors (verbal aggression, negativity and conflict, and withdrawal) and more positive communication behaviors (problem-solving communication and support). The distributions of verbal aggression and withdrawal were non-normal due to low rates of these behaviors; an inverse transformation was applied to verbal aggression and a square root transformation was applied to the withdrawal data before analyses. Due to the inverse transformation, high scores on verbal aggression now represent less verbal aggression.

Multilevel models were constructed to test the effect of trait mindfulness on each of the communication quality variables separately. These multilevel models controlled for gender and mindfulness  $\times$  gender interactions and also for preconflict discussion anger-hostility, which

showed significant relations to the outcomes in preliminary analyses. Results indicated no significant effects for actor or partner trait mindfulness, all  $ps > .05$ . We then examined the effects of actor and partner state mindfulness on each of the communication quality variables by adding the state mindfulness variables to these multilevel models. MLM results showed that actor state mindfulness was significantly and negatively related to verbal aggression ( $b = .09$ ,  $p < .001$ ) and negativity and conflict ( $b = -.25$ ,  $p < .05$ ). The amount of between-person variation explained in these behaviors by state mindfulness was 20% and 9%, respectively. Additionally, actor state mindfulness was marginally negatively related to withdrawal ( $b = -.06$ ,  $p < .10$ ; 6% of variation explained) and marginally positively related to support ( $b = .25$ ,  $p < .10$ ; 4% of variation explained). Actor state mindfulness was not significantly related to problem-solving communication. Thus, there was some indication that higher levels of state mindfulness during the conflict discussion were accompanied by better communication quality.

Results from the same multilevel models also indicated that actors' preconflict levels of anger-hostility were significantly related to negativity and conflict ( $b = .48$ ,  $p < .05$ ), problem-solving communication ( $b = -.89$ ,  $p < .01$ ), and support ( $b = -.83$ ,  $p < .01$ ), and were marginally related to withdrawal ( $b = .15$ ,  $p < .10$ ). Partners' pre-conflict levels of anger-hostility were also predictors of verbal aggression ( $b = -.14$ ,  $p < .05$ ), negativity and conflict ( $b = .86$ ,  $p < .001$ ), and withdrawal ( $b = .183$ ,  $p < .05$ ), and were also inversely predictive of problem-solving communication ( $b = -.83$ ,  $p < .01$ ) and support ( $b = -.65$ ,  $p < .05$ ). These results indicate that partners' as well as actors' preconflict anger-hostility was related to communication quality.

Finally, it is important to note that neither actor nor partner trait and state mindfulness scores were related to the importance of the problems discussed during the conflict discussion, all  $ps > .05$ . This suggests that the positive effects of trait and state mindfulness on the outcomes found here could not be explained by having discussions of less serious relationship issues.

## DISCUSSION

Replicating the results of Study 1, this study first showed a positive relation between mindfulness and relationship satisfaction. Experimental results then indicated that people higher in dispositional mindfulness reported a less severe emotional stress response to relationship conflict, evidencing lower levels of postdiscussion anxiety and anger-hostility. This relation was explained by the fact that more mindful people entered the conflict discussion with lower anxiety and anger-hostility. Trait mindfulness also significantly predicted positive (or at least less negative) change in love/commitment, and state mindfulness appeared to explain this relation to some extent. Trait mindfulness predicted positive change in respect, and marginally predicted positive change in support among women. State mindfulness did not explain these positive (or at least less negative) changes in perceived respect and support, although state mindfulness had an independent significant effect on these two outcomes. Finally, objective behavioral results indicated that while trait mindfulness did not predict video-coded communication quality, higher state mindfulness predicted some forms of better communication quality, including lower verbal aggression and negativity and conflict, and marginally predicted less withdrawal and higher support. All these salutary effects for mindfulness were found for "actors"; that is, mindfulness had beneficial effects on the person's own experience. The level of mindfulness of the partner had no effects on the experience of the other member of the couple.

## GENERAL DISCUSSION

Both theory (e.g., Boorstein, 1996; Kabat-Zinn, 1990) and research (e.g., Carson et al., 2004) have linked mindfulness to positive interpersonal qualities and healthy relational

functioning. In the present studies, the effects of mindfulness were tested through correlational, short-term longitudinal, and laboratory means. The study findings fully or partially supported the hypotheses. Both studies found, as predicted, that individuals higher in mindfulness reported higher levels of satisfaction with their romantic relationships. Also as predicted, both studies found evidence supporting a significant role for mindfulness in enhancing salutary responses to relationship stress. This was found using dispositional indicators in Study 1. In the context of a relationship conflict discussion, Study 2 found that more mindful individuals experienced lower levels of negative emotion, and reported more positive perceptions of the partner and the relationship after the exchange. State, but not trait mindfulness was related to fewer negative and more positive patterns of communication during the conflict discussion. These conflict discussion results are lent more importance by research showing that experiences and behaviors within couple conflict are a critical determinant of romantic couple happiness (e.g., Ting-Toomey, 1983).

To our knowledge, these are the first studies providing evidence that mindfulness itself predicts romantic relationship well-being. These studies suggest that the positive consequences that mindfulness has for psychological well-being (Brown & Ryan, 2003; Carlson & Brown, 2005) may also extend to romantic relationship well-being. For example, past research has found that mindfulness is associated with higher life satisfaction (Brown & Kasser, 2005; Brown & Ryan, 2003), while the present studies found parallel relations in romantic relationship satisfaction. Similarly, the inverse relations that past research has found between mindfulness and such characteristics as negative affectivity, anxiety, and aggressivity (Brown & Ryan, 2003, 2004) appear to extend to less negative and conflictual couple interactions. Similarly, more mindful individuals' lower trait levels of anxiety and anger-hostility (Brown & Ryan, 2003; Reiter, 2003) may explain why these individuals had lower prediscussion anxiety and anger-hostility in the second conflict discussion study, variables that explained the relation between trait mindfulness and postdiscussion anxiety and anger-hostility. These findings suggest that trait mindfulness does not buffer the emotional effects of conflict but rather appears to inoculate against it, because more mindful people in the second study entered conflict discussions experiencing less distress. The role of mindfulness as a form of distress inoculation deserves further study in couple conflict and other kinds of stressful encounters.

While the most consistent effects of trait mindfulness on couple conflict interactions were found in the realm of emotion regulation, trait mindfulness also predicted more positive evaluations of the partner and the relationship after conflict. In two of the three evaluation outcomes, namely, respect and support, only women's trait mindfulness carried predictive weight. Why this was so is not clear, but Gottman (1998) has suggested that females play a key, healing role following couple conflict. Research is needed to examine further whether mindfulness is a virtue of particular importance for women in helping to ensure the continuity of, and satisfaction with, romantic relationships after conflict.

#### *Limitations and Future Research*

Several limitations to these studies should be noted. First, because the samples were composed of dating college students it is not known whether the results are generalizable to older or to married couples. Also, it is not known whether the higher education level of the subjects may have had an effect on the relation between mindfulness and the various outcomes examined. It should also be noted that on average, participants in both of these studies reported that they were satisfied with their relationships; in Study 2, they reported being very happy to extremely happy with their partner ( $M = 4.47$  on a 0–6 scale). Individuals who were unhappy in their relationships may have been less likely to volunteer for the studies and therefore we do not know what effect mindfulness would have among more discordant couples. Future research should explore these issues. The need to examine the effects of mindfulness in more distressed couples is also highlighted by the low rates of anxiety and, especially, hostility after conflict

discussion in the second study. Low levels of some video-coded communication behaviors were also found, especially verbal aggression and withdrawal. This study found that state mindfulness was related, in expected directions, to a number of communication behaviors, but the ability to detect effects of trait mindfulness on these behaviors may have been limited by their relative absence during the discussions. Finally, the outcomes examined in these studies were based on self-reported experience (Studies 1 and 2) and objectively coded communication behaviors (Study 2). The examination of couple conflict would have been usefully supplemented by physiological measures of arousal and stress response to provide an objective complement to the emotional response measures used here (e.g., Levenson, Carstensen, & Gottman, 1994). This should be undertaken in future research.

Despite these limitations, the findings of the current research suggest implications for relationship satisfaction and longevity. For example, lower self-control has been related to interpersonal problems (Tangney et al., 2004), while anxiety, negativity, and conflict are predictive of marital dissatisfaction and dissolution (Carrere & Gottman, 1999; Caughlin et al., 2000; Gottman, 1998), as are verbal aggression (Carrere & Gottman, 1999) and withdrawal (“stonewalling”; Gottman, 1994). Mindfulness (either state or trait) was negatively related or marginally related to all of these mordant outcome variables and positively or marginally related to a number of outcomes that foster healthy relationships, such as accommodation, respect, support, and love and commitment. Perhaps the most direct evidence for the importance of mindfulness to romantic relationships was the positive zero-order correlation between the trait and relationship satisfaction. The findings on mindfulness from the conflict discussion may help to illuminate why more mindful people are more satisfied with their relationships.

Research testing the replicability of these findings is needed before conclusions on the role of mindfulness in romantic relationships can be made. Further study of the processes through which mindfulness may have its effects on couple relations is also needed. For example, given the role of mindfulness in general psychological adjustment and well-being (e.g., Brown & Ryan, 2003) and the recognition that individual well-being supports healthy relationship functioning (Epstein & Baucom, 2002), future research could examine whether mindfulness enhances relationship well-being through its salutary effects on the well-being of the individual partners. Finally, the present studies had a particular interest in the effects of mindfulness in the context of relationship stress; research could also examine how mindfulness leads to closeness, empathy, and other positive experiences that facilitate relationship satisfaction (Carson et al., 2004; Davis & Oathout, 1992).

Incipient research suggests that mindfulness training may contribute to positive outcomes in couples therapy (Carson et al., 2004). The present findings support Carson and colleagues’ (2004) research by showing that mindfulness may be an active ingredient in relationship satisfaction and stress tolerance. Future research could use longitudinal designs of a longer-term nature than that used here to further investigate the causal relation between mindfulness and relationship satisfaction and the other outcome variables we have examined. Given the diagnostic and predictive value of couple conflict experiences and outcomes, future research may also do well to pair conflict methodologies with mindfulness-based interventions, both to facilitate our understanding of their therapeutic value for distressed couples, and to increase our understanding of the processes through which mindfulness can enhance relationship quality.

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## NOTES

<sup>1</sup>As noted by an anonymous reviewer, knowledge of the pending conflict discussion may have influenced participants' preconflict discussion anxiety and anger-hostility scores. While the study consent form indicated that couples would be discussing one or two areas of relationship conflict, the form also noted that participants would "only be asked to discuss possible disagreements that you feel comfortable talking about" and that "the discussion is expected to be like those that regularly occur in romantic partner relationships and to be no more or less upsetting than normal discussions between couples." Together, these statements downplayed the adverse nature of the conflict discussion. Also noteworthy is that baseline affect ratings were collected before the conflict topic generation task was introduced in the procedure. While it cannot be known whether the baseline affect ratings reflected some anticipation of challenge, there are no clear reasons to suspect this.

<sup>2</sup>MacKinnon et al. (2002) used Monte Carlo statistical simulations and analyses to compare the accuracy and statistical power of 14 different methods for testing the statistical significance of intervening variable effects. Some of the most well-known tests of significance (e.g., the Sobel test of significance) had low statistical power and/or high error rates. The two methods that MacKinnon et al. (2002) found to be most accurate and powerful are used here.

<sup>3</sup> $z'$  is used instead of the standard  $z$  because the test's sampling distribution is not a standard normal distribution. The table of critical values for  $z'$  was obtained from [www.public.asu.edu/~ldavidpm/ripl/mediate.htm](http://www.public.asu.edu/~ldavidpm/ripl/mediate.htm).

<sup>4</sup>Preliminary analyses also tested the intervening effects of state mindfulness. With pre-discussion anxiety and anger-hostility included in the models, state mindfulness showed no explanatory effects.