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## Stress and Reactivity to Daily Relationship Experiences: How Stress Hinders Adaptive Processes in Marriage

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Maintaining a relationship requires that intimates successfully navigate the ups and downs of their daily experiences with their partners. Intimates whose daily global satisfaction is heavily dependent on these experiences exhibit worse relationship outcomes than do intimates whose satisfaction is less sensitive to fluctuating daily experiences. The current studies examined how intimates' reactivity to daily experiences within the relationship is affected by their experiences of stress outside the relationship. Using diary data, Study 1 examined the covariance between spouses' daily global and specific relationship evaluations in 146 newlywed couples. Between-subjects analyses revealed that daily global satisfaction covaried with perceptions of specific relationship experiences more strongly in spouses experiencing more stress. Study 2 examined the within-person association between reactivity and stress using 7-day diaries collected at 3 time points over 4 years in a sample of 82 couples. Intimates' reactivity to daily relationship experiences was stronger when they were experiencing greater than normal stress. All findings held when controlling for the influence of various individual difference factors on reactivity. These findings highlight ways that adaptive relationship functioning may be constrained by external stress.

*Keywords:* stress, relationship satisfaction, diary data, self-esteem, attachment

Perhaps one of the ingredients to a successful relationship is the relative independence of overall satisfaction from immediate events. (Jacobson and colleagues, 1982, p. 713)

Even the happiest intimate relationships encounter fluctuations in day-to-day interactions (e.g., McNulty & Karney, 2001). On many days, partners may experience primarily positive, supportive, and affectionate interactions with each other, but on other days their interactions may be characterized by conflict and negativity. As Jacobson, Follette, and McDonald (1982) have suggested, maintaining satisfaction over the course of a long-term relationship hinges on how intimates process and interpret the variability in their specific experiences of each other. Given that the quality of relationship experiences varies from day to day, linking general relationship evaluations to these specific events is likely to result in feelings of global satisfaction that are precarious and potentially vulnerable to declines (Arriaga, 2001). Conversely, separating overall judgments of the relationship from perceptions of im-

mediate experiences within the relationship serves to protect global satisfaction from any specific negative experiences that may arise, resulting in relationship satisfaction that is higher and more resistant to change (Jacobson et al., 1982; McNulty & Karney, 2001).

To better understand how intimates navigate the daily ups and downs of their relationships, growing research has examined factors that may affect the way intimates integrate their specific experiences in the relationship with their global relationship judgments. This research has identified how a number of important individual difference variables, such as self-esteem (Murray, Rose, Bellavia, Holmes, & Kusche, 2002) and attachment style (Campbell, Simpson, Boldry, & Kashy, 2005), may influence intimates' processing of specific daily experiences. For example, individuals with low self-esteem and anxious attachment styles seem to magnify the importance of daily experiences by exhibiting strong links between these specific experiences and global relationship judgments. Implicit in this person-centered approach, however, is the assumption that the adaptive processing of specific experiences represents a traitlike *ability* possessed by particular individuals.

Yet, the processing of daily experiences may be influenced not only by intimates' stable abilities, but also by their current *capacity* to utilize the skills necessary for the adaptive processing of relationship information. Recognizing that this capacity may fluctuate over time draws attention to unstable aspects of intimates' environments that may work to constrain or facilitate the adaptive processing of relationship experiences (Karney & Bradbury, 1995b). For instance, coping with high levels of stress in domains external to the relationship (e.g., work stress) tends to tax intimates' cognitive resources, leaving them fewer resources to effec-

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tively manage negative perceptions of their relationships (Baumeister, 2002; McCubbin & Patterson, 1983; Neff & Karney, 2004).

The goal of the current article was to examine whether stress external to a relationship constrains how intimates process daily experiences within the relationship, above and beyond the influence of various individual difference factors. To this end, the remainder of the introduction is divided into three sections. The first section more thoroughly reviews research suggesting that maintaining a separation between specific daily experiences and daily global judgments of relationship satisfaction may serve to enhance relationship outcomes. Next, potential moderators of the link between daily global and specific perceptions are discussed. This section suggests that individual difference factors and external stress may exert independent influences on intimates' responses to daily experiences. The final section describes two studies designed to examine whether, controlling for several notable individual difference factors, stress is associated with less adaptive processing of specific relationship experiences.

### Integrating Specific Experiences With Daily Global Relationship Satisfaction

In recent years, efforts to understand relationship maintenance and stability have expanded their focus beyond intimates' overall levels of satisfaction to acknowledge the role that fluctuations in satisfaction over time may play in determining relationship outcomes (Karney & Bradbury, 1995a). This research argues that vacillations in satisfaction undermine relationship stability. For instance, intimates whose global satisfaction fluctuates more severely report lower levels of commitment and are more likely to be in relationships that ultimately end in dissolution compared with intimates whose satisfaction levels remain stable, even if those stable feelings are not particularly positive (Arriaga, 2001). In other words, fluctuations in satisfaction predicted relationship outcomes above and beyond the effects of mean level of satisfaction.

Understanding how and why global satisfaction fluctuates over time may require greater attention to changes in intimates' relationship experiences from day to day. Clearly, intimates' global satisfaction should be related to the specific events occurring within the relationship. On a given day, satisfaction is likely to be higher when intimates experience a greater number of pleasant relationship events and lower when intimates experience increases in negative relationship events. However, prior research indicates that intimates may vary greatly in the degree to which their daily global satisfaction varies according to their changing daily experiences, a phenomenon referred to as *reactivity* (Jacobson et al., 1982). For instance, a daily diary study of newly married couples measured spouses' daily general satisfaction with the relationship as well as their satisfaction with a number of specific relationship events (e.g., satisfaction with partner's support, satisfaction with the way disagreements were resolved) over the course of 7 days (McNulty & Karney, 2001). Results revealed that even though the sample was comprised of generally happy, newlywed couples, spouses' perceptions of specific daily events were highly variable over time. In addition, spouses differed in the extent to which these specific perceptions covaried with their daily global satisfaction. Some spouses were highly reactive to daily relationship experiences, such that on days when daily experiences were positive,

they reported high levels of satisfaction, while on days when daily experiences were negative, they reported decreased levels of satisfaction. In this way, these spouses seemed to hold global evaluations of the relationship that were dependent on short-term evaluations of recent specific experiences and thus were fragile and susceptible to change. Other spouses, however, seemed to maintain a separation between their global and specific perceptions, such that their daily global satisfaction remained high and stable regardless of their fluctuating specific experiences.

Given that vacillations in global satisfaction have been associated with poor relationship outcomes (Arriaga, 2001), intimates whose daily global relationship evaluations are more reactive to specific relationship experiences may be engaging in a less adaptive form of information processing within the relationship. In fact, further evidence indicates that reactivity to daily experiences may be detrimental for relationships. In a diary study spanning 28 days, Jacobson et al. (1982) had a sample of distressed and nondistressed couples report on their daily global satisfaction as well as the number of positive and negative behaviors initiated by the partner that day. Not surprisingly, distressed couples on average reported fewer positive behaviors and more negative behaviors over the diary period than did nondistressed couples. Controlling for these differences in the frequency of positive and negative behaviors, distressed spouses were also more reactive to specific relationship events, such that their global satisfaction was more likely to fluctuate according to the number of positive and negative specific relationship events reported that day. Likewise, more recent research has revealed that unless couples are faced with particularly severe levels of negative relationship experiences, maintaining a low reactivity to daily relationship experiences predicts more stable levels of (i.e., less decline in) marital quality over the early years of marriage (McNulty, O'Mara, & Karney, 2008). Together, these results are consistent with the idea that marital distress may be characterized by a heightened sensitivity to daily relationship events.

### Moderators of Reactivity to Daily Experiences: Chronic Ability Versus Immediate Capacity

Though intimates' reactivity to specific daily relationship experiences represents an important component of relationship satisfaction, little is known about the factors that may account for the way in which intimates integrate their daily global and specific perceptions of their relationships. To address this issue, the current approach to understanding the sources of reactivity draws from the vulnerability-stress-adaptation (VSA) model of relationship development (Karney & Bradbury, 1995b), which suggests that the adaptive processing of relationship information may be influenced independently by two types of variables. First, enduring individual difference factors shape how intimates interpret and respond to specific relationship experiences. As these factors tend to remain stable over the course of a relationship, it has been argued that they exert a chronic influence on intimates' general ability to process relationship information in an adaptive manner. Second, spouses' stressful life circumstances may also affect the adaptive processing of relationship information by consuming cognitive resources that might otherwise be spent on relationship maintenance. Rather than producing a stable influence on intimates' processing abilities, however, life stressors are likely to vary over time, thereby exert-

ing a temporary influence on spouses' immediate capacity to engage in adaptive processing.

#### *Individual Differences and Adaptive Processing: Differences in Chronic Ability*

The few existing studies that have examined sources of reactivity in relationships have focused exclusively on the role of personality factors. In particular, two individual difference factors—attachment style and self-esteem—have been shown to be significantly associated with spouses' responses to daily relationship experiences. Anxiously attached individuals and individuals with lower levels of self-esteem both tend to exhibit a chronic uncertainty over their partner's feelings of love and regard, leading them to search for signs of their partner's commitment (e.g., Collins & Read, 1990; Murray et al., 2002). Consequently, these individuals tend to place more weight on daily relationship events, viewing them as indicative of the broader state of the relationship. For instance, in a 14-day diary study examining daily perceptions of support and conflict from a partner, daily global satisfaction, and daily expectations for the future of the relationship, anxiously attached individuals were found to be highly reactive to their specific relationship experiences (Campbell et al., 2005). On days when anxious individuals perceived more conflict in the relationship, they reported feeling less close to the partner and less optimistic about the future of the relationship. Conversely, on days when they perceived more support in the relationship, they reported greater closeness and higher levels of optimism. Similarly, low self-esteem individuals are more likely than high self-esteem individuals to report feeling rejected by the partner on days characterized by specific negative events (Murray, Bellavia, Rose, & Griffin, 2003; Murray et al., 2002). Together, these studies support the notion that enduring characteristics of the individual influence the manner in which intimates integrate their global and specific relationship perceptions.

#### *External Stress and Adaptive Processing: Differences in Immediate Capacity*

A second, and thus far overlooked, moderator of reactivity to daily relationship experiences may be the quality of partners' life circumstances outside the relationship. Growing research indicates that when the relationship context contains numerous challenges, such as work stress or financial difficulties, marriages tend to suffer (Bolger, DeLongis, Kessler, & Wethington, 1989; Conger, Rueter, & Elder, 1999; Schulz, Cowan, Pape Cowan, & Brennan, 2004). Specifically, the experience of stress in domains external to a relationship has been associated with lowered global relationship satisfaction (Bodenmann, 1997; Murray, Griffin, Rose, & Bellavia, 2006; Tesser & Beach, 1998). Further research examining the mechanisms of this effect has suggested that stress may affect global evaluations of the relationship through two general routes (Neff & Karney, 2004). First, stress can increase the frequency of negative events experienced within the relationship. For instance, spouses under greater stress often withdraw from their partners and reduce their involvement at home by engaging in fewer household tasks and fewer leisure activities (Matjasko & Feldman, 2006; Repetti, 1989). Consequently, intimates under stress tend to report more specific problems within the relationship, such as showing

less affection to one another and spending less time together (Neff & Karney, 2004). In this way, stress outside the marriage shapes spouses' experiences within the relationship, resulting in lowered overall relationship satisfaction.

In addition to affecting intimates' experiences within the relationship directly, stress may also render intimates less likely to process and interpret any negative events that do arise in an adaptive, relationship-enhancing manner. Theories of ego depletion (Baumeister, 2002) argue that self-control is a limited resource that can become depleted through use, making further acts of self-control more difficult. As coping with stressful events taxes spouses' self-regulatory resources, this coping should leave spouses with less energy to manage relationship issues, thus reducing their capacity to respond to those issues effectively (McCubbin & Patterson, 1983). In other words, to the extent that relationship-promoting behaviors require effort and self-regulation, individuals may find it difficult to engage in positive relationship functioning while also attempting to manage high levels of external stress.

For instance, satisfied spouses generally make allowances for their partners' occasional negative behaviors by relying on external, situational attributions to explain those lapses in behavior (Bradbury & Fincham, 1992). This process, though, requires effort (e.g., Gilbert, Pelham, & Krull, 1988), and under conditions of stress, spouses' capacity to give their partner the "benefit of the doubt" appears diminished. One study examining stress and attributions at eight assessments over a 4-year period revealed that when spouses were experiencing higher levels of stress than normal, they were more likely to rely on a maladaptive attributional style, viewing the partner as blameworthy for negative marital behaviors (Neff & Karney, 2004). As analyses were conducted at the within-subject level, this finding suggests that at times when intimates are experiencing greater stress, even those who generally exhibit positive relationship skills may be unable to draw upon or express those skills effectively.

By the same token, the capacity to distinguish global judgments of the relationship from daily experiences of specific relationship events may be undermined when intimates are coping with higher levels of external stress. To the extent that maintaining a separation between daily global and specific perceptions requires cognitive effort, conditions of stress may magnify the importance of these daily experiences for individuals' global judgments of their relationships. In contrast, intimates under low stress may find it easier to dismiss the significance of these daily experiences, allowing them to maintain stable levels of global satisfaction even as their daily experiences fluctuate over time. Thus, controlling for any differences in the nature of intimates' daily experiences, intimates under greater stress should exhibit less separation and thus stronger reactivity to daily relationship events. In this way, stress may act as a double-edged sword, increasing intimates' likelihood of experiencing negative relationship events while simultaneously hindering intimates' capacity to process specific relationship information in an adaptive manner.

#### Overview of the Current Studies

The current article presents two studies aimed at clarifying the circumstances under which spouses are more or less likely to link their global judgments of their relationships to their specific experiences within the relationship from day to day. Specifically,

expanding on prior research that has examined person-centered, individual difference factors exclusively, these studies were designed to address whether external stress may be associated with a greater reactivity to specific experiences, even when controlling for the effects of individual difference variables. Establishing a link between external stress and internal relationship reactivity would also inform prior research linking stress to global satisfaction by highlighting a potential mechanism through which stress may influence global relationship judgments. To provide a comprehensive examination of this issue, we examined the association between stress and reactivity at both the between-subjects (Study 1) and the within-subjects (Study 2) level. The first study examined whether spouses who are most reactive to daily experiences tend to have the greatest levels of external stress in their lives. The second study examined whether changes in spouses' stress were associated with corresponding changes in their reactivity to daily experiences over a 4-year period.

### Overview of Study 1

Drawing from a sample of newly married couples, in Study 1 we examined whether spouses experiencing more stress outside their relationship, as assessed in a face-to-face interview, were more reactive to daily experiences within the relationship, as assessed through a 7-day diary. The use of a sample of newlyweds provided several advantages. First, those just beginning their marriages frequently report highly positive perceptions of their relationships and are strongly motivated to maintain these perceptions over time (Neff & Karney, 2005b). Thus, data from newlyweds are likely to provide conservative tests of the current hypotheses. Moreover, a newlywed sample allows for the opportunity to examine reactivity in spouses who are not yet experiencing marital distress. Given that reactivity tends to be associated with marital distress (Jacobson et al., 1982; McNulty et al., 2008), understanding sources of reactivity in this happy sample may be useful for identifying couples who may be at risk for deterioration and divorce. Second, couples in the early years of marriage may be more likely to be exposed to a variety of stressful life events, as a number of stressors tend to accompany the transition to marriage (e.g., relocation, starting a new job).

Consistent with prior work (Campbell et al., 2005; Jacobson et al., 1982; McNulty & Karney, 2001), the current study derived a measure of spouses' reactivity to specific relationship experiences by examining the within-person covariance between spouses' daily global and specific relationship perceptions over the course of 7 days. In this way, a weaker covariance would indicate a greater degree of separation between daily global evaluations and specific perceptions, as well as, presumably, more adaptive processing of specific daily experiences. A stronger association, on the other hand, indicates that daily global evaluations are more dependent on specific perceptions (i.e., greater reactivity). It was expected that, in line with prior research, on average, spouses' daily global and specific perceptions would covary with one another. It was also expected that the strength of this covariance would vary significantly across spouses, such that some spouses would be more reactive than others to specific relationship experiences.

The primary goal of the study was to examine potential moderators of reactivity. It was expected that, consistent with prior research, both self-esteem and attachment style would predict

reactivity, such that spouses with low self-esteem and anxious attachment styles would exhibit a stronger covariance between their daily global and specific perceptions. It was also predicted that spouses' observed levels of stress would exert an independent influence on reactivity, such that those spouses who were rated by observers as having more stressful life circumstances would exhibit a stronger covariance between their daily global and specific perceptions. Thus, it was expected that, consistent with the VSA model of relationship maintenance (Karney & Bradbury, 1995b), individual differences and external circumstances would independently predict adaptive processes in the marriage.

### Method

#### Participants

Two methods were used to recruit couples for the study. First, advertisements were placed in community newspapers and bridal shops. Second, letters were sent to couples who had applied for marriage licenses in the community surrounding a large public university in the southeastern area of the United States. Couples responding to either method of solicitation were screened in a telephone interview to determine whether they met the following criteria: (a) this was the first marriage for each partner and (b) the couple had been married less than 6 months. The final sample consisted of 169 couples.<sup>1</sup>

On average, husbands were 25.6 ( $SD = 4.1$ ) years old and had received 16.3 ( $SD = 2.4$ ) years of education. Fifty-nine percent were employed full time, and 34% were full-time students. Wives, on average, were 23.4 ( $SD = 3.6$ ) years old and had received 16.2 ( $SD = 2.0$ ) years of education. Forty-five percent were employed full time, and 45% were full-time students. Slightly over 65% of the sample was Christian, and 94% of husbands and 86% of wives were White. The average household income of couples was under \$20,000.

#### Procedure

Within the first 6 months of their marriage, couples attended a laboratory session. Prior to this session, couples were mailed a packet of questionnaires that included self-report measures of self-esteem and attachment style as well as a letter instructing couples to complete all questionnaires independently of one another. Couples were asked to bring these questionnaires with them to the lab session. During this session, husbands and wives were

<sup>1</sup> Though other articles have been published with this data set (Hellmuth & McNulty, 2008; McNulty et al., 2008; Neff & Karney, 2005a, 2005b, 2007), this is the only article to examine spouses' reactivity to daily relationship experiences and observed stress levels. McNulty et al. (2008) did examine the consequences of reactivity for marital satisfaction as part of a broader article addressing moderators of the link between several forms of adaptive processing and future marital satisfaction. The article found that when a marriage is characterized by low to moderate levels of negativity, low reactivity to daily experiences is associated with more stable satisfaction over the early years of marriage. The current article builds on this work by highlighting the factors that may predict a spouse's propensity toward reactivity in the relationship. Consequently, there is little overlap in the ideas presented in these prior articles and the hypotheses examined in the current study.

interviewed individually regarding their stressful life circumstances. Finally, at the end of the lab session, couples were asked to participate in a 7-day daily diary task. Couples could choose from two methods for completing the diary. First, they could opt to do a paper version. In this case, each spouse was given all 7 nights' worth of individual diaries along with a set of prestamped envelopes. Couples were instructed to independently fill out one diary each night before going to bed and to drop that diary in the mail the next morning. Second, couples with Internet access could choose to do an online version. Husbands and wives were each given a website address and a unique code that allowed them to log on to the study website. Again, couples were instructed to independently complete one diary each night before going to bed. Couples were paid \$70 for their participation in the study.

Overall, 146 couples (86%) participated in the daily diary portion of the study. Couples participating in the diary portion of the study did not differ from the rest of the sample in their global marital satisfaction, level of stress, or any demographic variables (e.g., age, education, income). Of the 146 couples, 44.5% (65 couples) chose to complete paper diaries and 55.5% (81 couples) opted for the online diary. Couples completing the online diary did not differ from those completing the paper diary in marital satisfaction or in any demographic variable. Spouses completing the online diary also did not differ from spouses completing the paper diary in their observed stress or their covariance between global and specific perceptions (e.g., reactivity) over the 7-day period. A total of 81.5% (119 couples) completed the diary all 7 nights. Only about 4% (6 couples) provided diary data for less than 4 days. Whether spouses chose the paper diary or the online diary did not affect the amount of data spouses provided. Spouses completing the diary for all 7 nights did not differ from spouses providing less data in their observed stress or their reactivity over the week. However, as data were examined through growth curve modeling, participants who did not provide data for all 7 days could be included in the analyses. Thus, results reported are based on data from all 146 couples who completed the diary.

### Materials

**Daily global marital satisfaction.** To measure spouses' daily global evaluation of the relationship, each night for 7 nights spouses responded to the following three items modified from the Kansas Marital Satisfaction Scale (Schumm et al., 1986): (a) "How satisfied are you with your partner today?" (b) "How satisfied are you with your relationship with your partner today?" and (c) "How satisfied are you with your marriage today?" Participants responded to all items on a 7-point Likert scale ranging from 1 (*very unsatisfied*) to 7 (*very satisfied*). A summed composite score was created for each day, with higher scores indicating greater satisfaction. The internal consistency was high across days, ranging between .90 and .97 for husbands and between .89 and .96 for wives.

**Daily perceptions of specific relationship aspects.** To measure daily perceptions of specific experiences, each night spouses were also asked to think of the previous 24-hr period and evaluate these nine specific aspects of the marriage: (a) their sex life, (b) their partner's mood, (c) how affectionate their partner was, (d) the way their partner contributed to household chores, (e) how their partner supported them, (f) how dependable their partner was, (g) their

conversations with their partner, (h) the time spent together with their partner, and (i) the way disagreements were resolved. These items were chosen because they represented specific relationship aspects that could potentially vary from day to day. Participants responded to all items on a 7-point Likert scale ranging from 1 (*very unsatisfied*) to 7 (*very satisfied*). A summed composite score was created for each day, with higher scores indicating more positive evaluations. The internal consistency of the measure was high across days, ranging between .82 and .94 for husbands and between .84 and .95 for wives.

**Self-esteem.** To assess spouses' self-esteem, spouses completed the Rosenberg Self-Esteem Questionnaire (Rosenberg, 1965). Scores on the measure can range from 4 to 40, with higher scores indicating higher self-esteem. The internal consistency of the 10 items was adequate for both spouses ( $\alpha = .87$  for husbands and  $.89$  for wives).

**Attachment style.** Spouses' attachment style was assessed with the Adult Attachment Scale (Collins & Read, 1990), an 18-item measure that assesses the dimensions of closeness, anxiety, and dependence in relationships. Spouses were asked to consider their general feelings regarding romantic partners and then indicate how well each of the items described them. Sample items from the measure include, "I find it relatively easy to get close to others" (closeness item), "I often worry that my partner will not want to stay with me" (anxiety item), and "I find it difficult to trust others completely" (dependence item; reverse-scored). Scores on each of the three dimensions can range from 5 to 30, with higher scores indicating higher levels of closeness, anxiety, or comfort with dependence. The internal consistency for each of the dimensions was high for husbands ( $\alpha$ s = .76, .78, and .80 for closeness, anxiety, and dependence, respectively) and for wives ( $\alpha$ s = .81, .84, and .82 for closeness, anxiety, and dependence, respectively).

**Interviewer ratings of external stress.** During the laboratory visit, each spouse was interviewed individually to assess external stress with a modified version of the UCLA Life Stress Interview developed by Hammen et al. (1987). Spouses were asked to describe in detail the quality of the following 12 life domains over the prior 6 months: (a) the marital relationship, (b) relationships with family, (c) relationships with in-laws, (d) relationships with friends, (e) experiences at school, (f) experiences at work, (g) experiences as a homemaker, (h) unemployment, (i) finances, (j) living conditions, (k) own health, and (l) spouse's health. For each domain, interviewers were instructed to probe for concrete indicators of the ongoing stressors that the spouse may be experiencing, as well as for the presence of resources that may be helpful for coping with stress in that domain (e.g., social networks, large financial savings). The questionnaire was structured such that spouses were asked about their marriage first, then about the other domains. This ordering of questions was chosen in order to encourage spouses to separate their marital stress from their stress in the other domains (e.g., Strack, Martin, & Schwarz, 1988). After listening to spouses' descriptions of each domain, interviewers rated spouses' experiences within that domain on a scale ranging from 1 (*exceptionally poor conditions*) to 5 (*superior conditions*) that included half-points between whole-number ratings (e.g., 2.5, 3.5). Thus, a score of 5 would indicate not only a lack of stress in the domain, but also the presence of ample resources that prepare the couple for possible future stress in that area. A score of 4 indicated no significant stress in the domain and few, if any,

resources for coping with future stress. Spouses experiencing stress in the domain would receive a score lower than 4, depending on the severity and nature of the stress, as well as the resources at their disposal. All interviews were audiotaped. Interrater reliability, which was assessed by having interviewers rate the audiotapes of a randomly selected 25% of the interviews, was generally quite high (the average intraclass correlation coefficient across domains was .91 for husbands and .90 for wives).

Of the 12 domains included in the original measure, we selected only those 11 domains that were representative of stress occurring outside the marriage to be included in the final composite score (i.e., ratings of stress in the marital relationship were omitted from analyses). Furthermore, as not all of the remaining 11 domains were relevant to all spouses (e.g., experiences in school, unemployment), the final composite score was calculated by computing spouses' average level of stress across the domains for which they were scored. In the original scoring system, higher scores actually indicated lower levels of nonmarital stress. Given that this scoring system is somewhat counterintuitive, however, this variable was then rescored so that higher scores indicated greater levels of stress.

### Data Analysis

Examining spouses' reactivity to specific relationship experiences, as well as potential moderators of that reactivity, required both within-subject and between-subjects analyses. A within-subject approach allowed us to examine whether changes in a spouse's specific perceptions were associated with changes in that individual's daily global relationship satisfaction, controlling for spouses' idiosyncratic tendencies to view their relationship and their specific experiences more or less favorably. In other words, the within-subject approach modeled spouses' reactivity as the covariance between daily global and specific perceptions across time. The between-subjects approach allowed us to evaluate whether the degree of spouses' reactivity was associated with their self-esteem, their attachment style, and their stress level.

To address both the within-subject and between-subjects hypotheses, we examined the data with hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992). This approach was adopted

for several reasons. First, in contrast to other approaches to analyzing multilevel models (e.g., structural equation modeling), HLM provides reliable estimates of within-subject parameters even when sample sizes are relatively small. Second, HLM provides maximally efficient estimates of these parameters by weighting individual estimates according to empirical Bayes theory. When the within-subject parameter for an individual can be estimated precisely, the final estimate relies heavily on the individual data. When the parameter cannot be estimated precisely (e.g., because of missing data), the final estimate relies more heavily on the mean of the sample. Because the most precise estimates therefore contribute more to the final estimated variance of the sample, variances estimated in this way tend to be more conservative than those obtained through traditional ordinary least squares methods. For all of the analyses reported, parameters describing husbands' and wives' data were estimated simultaneously to control for the nonindependence of couple data, according to procedures described by Raudenbush, Brennan, and Barnett (1995).

## Results

### Descriptive Statistics and Correlations

Table 1 presents descriptive statistics for measures of observed stress, self-esteem, and attachment styles, as well as the average daily global satisfaction and the average daily specific perceptions across the 7 days of the diary. Not surprisingly, the table reveals that these newlyweds generally maintained highly positive views of the marriage and were experiencing relatively low levels of external stress. However, there was notable variability across spouses in both their levels of stress and their daily relationship perceptions.

Examination of the correlations between spouses' self-reported individual difference factors and their observer-rated levels of external stress revealed that spouses' stress was significantly associated with their self-esteem, such that spouses who were rated as having more stressful lives tended to evaluate themselves in a more negative light ( $r = -.45, p < .001$ , for husbands;  $r = -.22, p < .01$ , for wives). Observed stress was also significantly associated with all three of the attachment dimensions for both hus-

Table 1  
*Means of Observed Stress, Individual Difference Variables, and Daily Perceptions (Study 1)*

Spouse	Stress	RSE	Attachment style			Daily perceptions	
			Closeness	Anxiety	Dependence	Global	Specific
Husbands							
<i>M</i>	4.4	34.6	22.7	12.3	20.7	18.5	49.0
<i>SD</i>	0.3	4.9	4.2	4.4	4.6	2.3	7.4
Minimum	1.8	14.0	9.0	6.0	6.0	8.5	23.0
Maximum	3.4	40.0	30.0	25.0	30.0	21.0	63.0
Wives							
<i>M</i>	2.4	33.6	23.4	11.8	21.7	18.7	48.9
<i>SD</i>	0.3	5.5	4.7	5.0	4.9	2.5	7.4
Minimum	1.8	14.0	8.0	6.0	6.0	3.0	12.0
Maximum	3.3	40.0	30.0	29.0	30.0	21.0	62.3

*Note.* For the measure of observed stress, higher scores indicate more stress. For the measure of dependence attachment, higher scores indicate more comfort depending on others. RSE = Rosenberg Self-Esteem Questionnaire.

bands ( $r = -.25, p < .001$ , for closeness;  $r = .41, p < .001$ , for anxiety;  $r = -.33, p < .001$ , for dependence) and wives ( $r = -.21, p < .001$ , for closeness;  $r = .25, p < .01$ , for anxiety;  $r = -.32, p < .001$ , for dependence). Spouses experiencing greater stress tended to be less close, less comfortable with dependence, and more anxious in their relationships with others. Finally, self-esteem was significantly associated with each of the attachment dimensions for both husbands ( $r = .42, p < .001$ , for closeness,  $r = -.36, p < .001$ , for anxiety;  $r = .35, p < .001$ , for dependence) and wives ( $r = .31, p < .001$ , for closeness;  $r = -.49, p < .001$ , for anxiety;  $r = .35, p < .001$ , for dependence), such that spouses higher in self-esteem also reported being more comfortable with closeness and dependence and less anxious in their romantic relationships.

Further analyses revealed that spouses' personality characteristics and their levels of stress predicted the average positivity of spouses' daily experiences across the diary days. Higher self-esteem was associated with more positive evaluations of specific relationship aspects for both husbands ( $r = .26, p = .002$ ) and wives ( $r = .25, p = .002$ ). Husbands who were more comfortable with closeness ( $r = .21, p = .01$ ) and dependence ( $r = .27, p < .001$ ) and less anxious ( $r = -.27, p < .001$ ) also reported more positive specific evaluations. For wives, comfort with closeness ( $r = .20, p = .02$ ) and lower levels of anxiety ( $r = -.17, p = .04$ ) were associated with more positive daily specific perceptions, though comfort with dependence ( $r = .14, p = .10$ ) was not. Likewise, and consistent with the idea that stress may be associated with increases in negative relationship experiences, spouses experiencing greater stress reported more negative evaluations of specific relationship aspects across the 7 days ( $r = -.24, p < .01$ , for husbands;  $r = -.19, p = .02$ , for wives). Given that self-esteem, attachment, and stress did predict spouses' reports of daily experiences, all subsequent analyses examining reactivity to daily experiences controlled for spouses' baseline evaluations of their specific experiences (e.g., average negativity of daily experiences).

### Do Spouses Vary in Their Daily Reactivity to Specific Relationship Experiences?

The first step of the analyses was to examine whether spouses varied in their daily reactivity to specific relationship events. To do

this, the within-subject association between daily global marital satisfaction and daily perceptions of specific relationship experiences was examined. It was predicted that while spouses' daily global and specific perceptions would be associated on average, there would nonetheless be significant variability in the extent of this covariance across spouses. This hypothesis was modeled with HLM according to the following equation:

$$\begin{aligned} \text{Spouse's daily global satisfaction} = & \beta_{0j} (\text{husbands}) \\ & + \beta_{1j} (\text{wives}) + \beta_{2j} (\text{husbands' day}) + \beta_{3j} (\text{wives' day}) \\ & + \beta_{4j} (\text{husbands' specific perceptions}) \\ & + \beta_{5j} (\text{wives' specific perceptions}) + \text{error}, \quad (1) \end{aligned}$$

where day and specific perceptions were centered within-persons for each spouse. Including day in the model controlled for the possibility that factors such as habituation could have influenced how spouses completed diary materials over time (Bolger, Davis, & Rafaeli, 2003). Centering specific perceptions in this way allowed for the examination of whether being high or low on a given day relative to the individual's own mean rating was associated with changes in daily global satisfaction. In other words, this centering strategy controlled for individual differences in the amount of daily negativity experienced. In this equation,  $\beta_{0j}$  and  $\beta_{1j}$  represent an estimate of the average positivity of a spouse's daily global satisfaction over the 7 days.  $\beta_{2j}$  and  $\beta_{3j}$  capture the slope of a spouse's satisfaction over the course of the diary task.  $\beta_{4j}$  and  $\beta_{5j}$  capture the within-subject association between a spouse's daily global satisfaction and perceptions of specific relationship aspects, controlling for the spouse's general tendency to view the marriage, as well as specific aspects of the marriage, more or less favorably. These last two parameters, then, represent an index of reactivity for husbands and wives, respectively, with larger values indicating greater reactivity to (or less adaptive processing of) specific relationship aspects.

Table 2 presents the average  $\beta$  terms for husbands and wives, as well as the following effect size for all parameters:

$$\text{effect size } r = \sqrt{f^2/(f^2 + df)}.$$

Results revealed that, on average, daily global and specific perceptions significantly covaried for both husbands and wives. However, as seen in the last column of Table 2, results also revealed

Table 2  
Covariance Between Daily Global Satisfaction and Daily Specific Experiences: Evidence for Reactivity (Study 1)

Spouse and variable	$\beta$	SE	$t^a$	$r$	$\chi^2$ test for variability <sup>b</sup>
Husbands					
Intercept	18.41	0.38	48.7***	.97	288.13***
Slope	0.08	0.03	2.8**	.23	159.38***
Reactivity	0.19	0.01	17.5***	.83	318.84***
Wives					
Intercept	18.95	0.37	41.3***	.97	275.13***
Slope	0.07	0.03	2.3*	.19	167.55***
Reactivity	0.19	0.01	16.3***	.81	377.50***

<sup>a</sup>  $dfs = 143$ . <sup>b</sup>  $dfs = 101, N = 102$ .  
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .



that there was notable variability across spouses in the extent of this reactivity. Among these generally happy newlywed spouses, some spouses more than others maintained a daily global satisfaction that was heavily dependent on positive specific relationship experiences.

*Moderators of Spouses' Reactivity to Specific Relationship Experiences*

The primary goal of Study 1 was to examine potential moderators of spouses' reactivity. Drawing from the VSA model of relationship development (Karney & Bradbury, 1995b), we expected that the manner in which spouses processed specific relationship events would be influenced both by spouses' general processing abilities and by their current capacity to utilize the skills necessary for engaging in adaptive processing. Specifically, we hypothesized that individual difference factors, in particular self-esteem and attachment style, and external stress would exert independent influences on spouses' processing of specific relationship information.

*Do individual difference factors moderate spouses' reactivity?* It was predicted that, replicating prior research, spouses with lower levels of self-esteem and higher levels of anxiety would exhibit a stronger covariance between their daily global and specific perceptions. To test these hypotheses, we entered spouses' self-esteem and attachment style in separate analyses at the between-subjects level of the HLM analysis to predict each of the parameters in Equation 1. As examples, the between-subjects-level equations for examining the moderating role of self-esteem are presented below.

$$\beta_{0j}(\text{husbands' intercept}) = \gamma_{00} + \gamma_{01} (\text{husbands' self-esteem}) + \text{error} \quad (2)$$

$$\beta_{1j}(\text{wives' intercept}) = \gamma_{10} + \gamma_{11} (\text{wives' self-esteem}) + \text{error} \quad (3)$$

$$\beta_{2j}(\text{husbands' slope}) = \gamma_{20} + \gamma_{21} (\text{husbands' self-esteem}) + \text{error} \quad (4)$$

$$\beta_{3j}(\text{wives' slope}) = \gamma_{30} + \gamma_{31} (\text{wives' self-esteem}) + \text{error} \quad (5)$$

$$\beta_{4j}(\text{husbands' reactivity}) = \gamma_{40} + \gamma_{41} (\text{husbands' self-esteem}) + \text{error} \quad (6)$$

$$\beta_{5j}(\text{wives' reactivity}) = \gamma_{50} + \gamma_{51} (\text{wives' self-esteem}) + \text{error}, \quad (7)$$

where self-esteem was centered around the sample mean. For the purposes of these analyses, the final two equations, in particular  $\gamma_{41}$  and  $\gamma_{51}$ , were the primary parameters of interest. These two parameters capture the between-subjects association between spouses' reactivity and their self-esteem, controlling for the associations between self-esteem and all other parameters identified in Equation 1 (i.e., average daily global satisfaction and daily satisfaction slope). As seen in Table 3, results revealed that neither

Table 3  
*General Ability and Reactivity: Individual Difference Moderators of Reactivity (Study 1)*

Variable	$\gamma$	SE	<i>t</i>	<i>r</i>
Self-esteem				
Husbands	-.001	.003	-0.2	.02
Wives	-.001	.002	-2.8**	.23
Attachment style: Closeness				
Husbands	-.001	.003	-0.3	.03
Wives	-.004	.003	-1.3	.11
Attachment style: Anxiety				
Husbands	.001	.003	0.5	.04
Wives	.007	.002	2.7**	.22
Attachment style: Dependence				
Husbands	-.001	.002	-0.2	.02
Wives	-.005	.002	-2.1**	.17

Note. All *dfs* are 142.

\*\* *p* < .01.

self-esteem nor any of the attachment dimensions moderated reactivity for husbands. For wives, however, self-esteem, anxious attachment, and comfort with dependence were significantly associated with reactivity. Consistent with prior research, wives with lower levels of self-esteem exhibited a stronger covariance between their daily global and specific relationship perceptions. Furthermore, wives with more anxious attachments were also more reactive to daily relationship experiences. Finally, wives who were more comfortable with dependence tended to maintain a greater separation between their daily global satisfaction and specific relationship experiences. Thus, lower levels of self-esteem, higher levels of anxiety, and lower levels of comfort with dependence were associated with a less adaptive processing of specific relationship experiences.

*Does observed stress moderate spouses' reactivity?* The key analysis of Study 1 examined whether spouses' observed levels of stress moderated their reactivity to daily experiences, controlling for self-esteem and attachment style. It was predicted that spouses experiencing higher levels of external stress would exhibit the strongest covariance between their daily global and specific relationship perceptions over the 7 days of the diary. To test this hypothesis, we entered spouses' stress into the between-subjects level of the HLM analysis to predict each of the parameters in Equation 1 (see Equations 2–7 above). The first analysis examined whether stress alone would be associated with spouses' reactivity.

As seen in Table 4, the association between spouses' observed stress and their reactivity was marginal for husbands and significant for wives. Thus, spouses experiencing greater levels of external stress were more reactive to daily specific relationship experiences. Next, analyses were conducted to examine whether this association held when controlling for spouses' self-esteem and attachment style. Each individual difference variable was entered in a separate analysis. As seen in Table 4, the association between wives' observed stress and their reactivity remained significant even when controlling for their self-esteem and attachment style. Moreover, of the three individual difference factors found to predict reactivity in the previous analyses, only anxious attachment remained a significant predictor of reactivity when also including stress in the equation. These results, then, suggest that stress may

Table 4  
*Current Capacity and Reactivity: External Stress as a Moderator of Reactivity (Study 1)*

Variable	$\gamma$	SE	<i>t</i>	<i>r</i>
Observed stress alone as a moderator of reactivity ( <i>df</i> = 142)				
Husbands	.07	.04	1.7 <sup>†</sup>	.15
Wives	.10	.05	2.3*	.19
Stress controlling for self-esteem ( <i>df</i> = 141)				
Husbands				
Stress	.07	.05	1.7 <sup>†</sup>	.14
Self-esteem	.001	.003	0.5	.04
Wives				
Stress	.04	.02	2.4*	.20
Self-esteem	-.001	.001	-1.1	.09
Stress × Self-Esteem ( <i>df</i> = 140)				
Husbands	.001	.004	0.1	.01
Wives	-.01	.006	-1.5	.12
Stress controlling for anxious attachment ( <i>df</i> = 141)				
Husbands				
Stress	.08	.04	1.9 <sup>†</sup>	.16
Anxiety	-.003	.003	-0.8	.07
Wives				
Stress	.08	.04	1.9*	.16
Anxiety	.006	.003	2.2*	.18
Stress × Anxiety ( <i>df</i> = 140)				
Husbands	-.006	.004	-1.1	.09
Wives	.006	.006	1.1	.09
Stress controlling for dependence ( <i>df</i> = 141)				
Husbands				
Stress	.07	.04	1.5	.08
Dependence	-.002	.04	-0.1	.01
Wives				
Stress	.03	.02	1.7 <sup>†</sup>	.14
Dependence	-.001	.001	-1.3	.11
Stress × Dependence ( <i>df</i> = 140)				
Husbands	.01	.005	1.7	.13
Wives	.007	.004	1.5	.12

<sup>†</sup>  $p < .10$ . \*  $p < .05$ .

exert an important and independent influence on the processing of relationship information, above and beyond the influence of stable individual difference factors.

Further analyses examined whether spouses with both negative personality characteristics and high levels of stress would be most reactive to daily relationship experiences. In other words, might possessing low self-esteem or an insecure attachment style become particularly problematic for the relationship under conditions of stress? No significant interactions between these individual difference factors and stress were found for husbands or wives (see Table 4).

### Discussion of Study 1

Consistent with prior daily diary research, current results indicated that spouses varied significantly in their reactivity to specific experiences in the relationship. Examination of the within-person

association between spouses' daily global satisfaction and their daily perceptions of specific relationship aspects across the 7 days revealed that, although global and specific perceptions covaried over time on average, there was significant variability in the strength of that covariance across spouses. For some spouses, maintaining high levels of daily global satisfaction was dependent on perceiving many positive and few negative events in the relationship that day. Other spouses, however, were more likely to separate their daily global judgments of the relationship from their specific relationship experiences. Thus, these spouses maintained more stable levels of satisfaction, despite fluctuations in their daily relationship experiences.

Also consistent with prior research, results partially supported the idea that separating daily specific experiences from global relationship judgments may reflect a traitlike ability. Wives who were lower in self-esteem, higher in anxious attachment, and lower in their comfort with dependence in relationships were more reactive to specific experiences, exhibiting a stronger covariance between their global and specific perceptions over the course of the diary. No significant associations between these individual difference factors and reactivity were found for husbands.

A more consistent pattern of results emerged when examining how observed levels of stress may influence the adaptive processing of relationship information. Correlations between stress and daily perceptions revealed that spouses experiencing greater stress reported more negative evaluations of their specific relationship aspects. Controlling for spouses' overall assessments of their daily experiences, husbands and wives coping with higher levels of external stress also tended to be more reactive to daily relationship experiences. In other words, spouses experiencing greater stress reported more negative daily experiences, and independently, their daily experiences were more likely to covary with their daily global satisfaction. Furthermore, when entering stress and personality simultaneously as predictors of reactivity, stress remained a significant predictor, while most individual difference factors were rendered nonsignificant. Thus, results are consistent with theories suggesting that stress may represent a particularly potent force shaping spouses' relationship functioning. Spouses' adaptive processing may be influenced not only by spouses' relationship skills, but also by their capacity to use those relationship skills in a specific period of their lives.

An implication of the idea that stress may hinder spouses' immediate capacity to utilize their relationship skills is that the effects of stress should wax and wane over the course of a continuing relationship. Just as the onset of stress may impede adaptive processing by consuming cognitive resources that might otherwise be used for relationship maintenance, as that stress subsides, spouses' capacity to separate their daily experiences from their satisfaction may recover. Determining whether reactivity to daily relationship experiences varies over time according to the amount of stress spouses are currently facing requires longitudinal, within-subject research.

### Overview of Study 2

To explore the implications of Study 1 and more precisely examine the role of stress in the adaptive processing of relationship information, Study 2 examined the within-person association between reactivity and stress over a 4-year period in an independent

sample of 82 newlywed couples. Couples were asked to complete a 7-day diary assessing their daily global and specific perceptions of the marriage at three different time points during the first 4 years of the marriage. In this way, three repeated measures of reactivity could be derived for each spouse. At each of these three assessments, spouses were also asked to report on the level of external stress they were currently experiencing. It was predicted that spouses' reactivity to daily specific relationship experiences would be associated with their current stress levels over time, such that at times when spouses were experiencing greater levels of stress than normal, they would also exhibit a greater degree of reactivity. Conversely, as stress levels decreased, spouses should be more likely to engage in more adaptive processing of their daily experiences. In other words, even spouses who generally maintain an adaptive separation of their daily global and specific perceptions may find it more difficult to do so when they are coping with higher levels of external stress.

### Method

#### Participants

Two methods were used to recruit couples for this study. First, advertisements were placed in community newspapers and bridal shops. Second, letters were sent to couples who had applied for marriage licenses in the community surrounding a large, public university in the Southeast. As in Study 1, couples responding to either method of solicitation were screened in a telephone interview to determine whether they met the following criteria: (a) this was the first marriage for each partner and (b) the couple had been married less than 6 months. The final sample consisted of 82 couples.<sup>2</sup>

On average, husbands were 25.1 ( $SD = 3.3$ ) years old and had received 16.3 ( $SD = 2.4$ ) years of education. Forty percent were employed full time, and 54% were full-time students. Wives, on average, were 23.7 ( $SD = 2.8$ ) years old and had received 16.3 ( $SD = 1.2$ ) years of education. Thirty-nine percent were employed full time, and 50% were full-time students. Slightly over 70% of the sample was Christian, and 83% of husbands and 89% of wives were White. The average combined income of couples was less than \$20,000 per year. Overall, the demographics of this sample were quite similar to those of the sample used in Study 1.

#### Procedure

Couples were contacted every 6 months over a 4-year period as part of a larger study of marriage. Reactivity to daily relationship experiences was assessed on the basis of data from three of the eight waves of data collected during the 4-year period. The three time points relevant to the current analyses were as follows: during the first 6 months of marriage, 2 years into the marriage, and 4 years into the marriage. At each of these assessments, couples were mailed a packet of questionnaires that included a self-report measure of stress as well as a letter instructing couples to complete all questionnaires independently of one another. At each of these three assessments, couples were also asked to participate in a 7-day daily diary task. In all cases, each spouse was given all 7 nights' worth of a paper diary at once, along with a set of prestamped envelopes. Couples were instructed to independently fill out one

diary each night before going to bed and to drop that diary in the mail the next morning. Couples were paid \$50 at each assessment.

At the first wave of data collection, 80 (98%) couples agreed to participate in the diary portion of the study. Of these couples, 72 (90%) returned all 7 days' worth of the diary, while the remaining couples provided at least three daily assessments. At the final wave of data collection (after 4 years of marriage), 66 couples were still married, and 18 couples had divorced. Of the 66 couples who were still married and participating in the study, 49 couples (74%) participated in the final diary assessment. Of these couples, 46 (94%), returned all 7 days' worth of the diary, while the remaining couples provided at least three daily assessments. Couples who completed the final diary task did not differ from the remaining couples in their initial daily relationship perceptions or in their initial stress, assessed when the couple was first married. However, as data were examined through growth curve modeling, participants who did not provide all waves of data (i.e., participants who had missing data or divorced during the study) could be included in all analyses. Thus, results reported below are based on data from all 80 couples who completed the initial diary. Omitting couples who divorced did not alter any of the findings reported below.

#### Materials

*Daily global marital satisfaction.* To measure spouses' daily global evaluation of the relationship at each of the three diary assessments, the same three items described in Study 1 were used. A summed composite score was created for each day at each assessment, with higher scores indicating greater satisfaction. The internal consistency was high across days at each assessment, ranging between .90 and .97 for husbands and between .91 and .98 for wives.

*Daily perceptions of specific relationship aspects.* To measure spouses' daily perceptions of their specific experiences at each of the three diary assessments, the same nine items described in Study 1 were used. A summed composite score was created for each day at each assessment, with higher scores indicating more positive evaluations. The internal consistency of the measure was high across days for each of the three assessments, ranging between .82 and .96 for husbands and between .85 and .94 for wives.

*Stressful life circumstances.* To assess external stress at each of the three assessments, we had couples complete a version of the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), designed to assess life events in the previous 6 months. Sixty-five negative, stressful events were selected, with an emphasis on concrete events likely to occur in a young, married population. Events were grouped to represent nine life domains: marriage (e.g., separation from spouse due to work or travel), work (e.g., passed over for promotion at work), school (e.g., school application

<sup>2</sup> A prior article (McNulty & Karney, 2001) using this data set has described the covariance between spouses' daily global satisfaction and daily relationship experiences. However, that article relied on diary data collected at only Time 1 (during the first 6 months of marriage). It reported that the strength of the covariance between global and specific perceptions varied significantly across spouses. This article is the only article to report on the multiple assessments of the diary (e.g., diary data collected 2 and 4 years into the marriage). It is also the only article to examine the association between reactivity and stress.

rejected), family and friends (e.g., death of a friend or family member), finances (e.g., encountered unexpected expenses), health (e.g., had minor physical illness), personal events (e.g., involved in an accident), living conditions (e.g., difficulties with neighbors), and legal problems (e.g., involved in a lawsuit or legal action). For each event, spouses were asked to indicate whether the event occurred (1 = yes, 0 = no). To be included in the final composite score, however, the event could not represent a likely consequence of marital satisfaction or marital distress. Fourteen items were excluded from the final score for this reason (e.g., sexual difficulties). Thus, the measure taps only those stressors external to (i.e., unlikely to be caused by) the marriage. The final stress score, which could range from 0 to 51, was computed by adding together the number of events that the spouse reported had occurred.

*Individual difference factors.* At Time 1, during the first 6 months of marriage, spouses were also asked to complete measures of self-esteem and attachment style. As in Study 1, self-esteem was assessed with the Rosenberg Self-Esteem Questionnaire (Rosenberg, 1965). The internal consistency was adequate for both spouses ( $\alpha$ s = .87 for husbands and .88 for wives). Spouses' attachment style again was assessed with the Adult Attachment Scale (Collins & Read, 1990). The internal consistency for each of the dimensions was adequate for husbands ( $\alpha$ s = .77, .86, and .77 for closeness, anxiety and dependence, respectively) and for wives ( $\alpha$ s = .81, .89, and .84 for closeness, anxiety and dependence, respectively).

## Results

### Descriptive Statistics

Table 5 presents descriptive statistics for measures of external stress as well as the average daily global satisfaction and the average daily specific perceptions across the 7 days of the diary for each of the three data assessments. As in Study 1, in general these couples maintained a fairly positive view of the marriage and were experiencing relatively low levels of stress. Again, however, across spouses there was notable variability in their levels of stress and daily relationship perceptions at each of the assessments. Moreover, though average stress was low in general, the most frequently endorsed stressors (unexpected expenses, recurring minor illness, friend or relative in poor health, and unemployment for a period longer than 1 month) represent fairly serious life events, suggesting that even a few stressors may have an important impact on spouses' lives.

### Are Changes in Stress Associated With Changes in Spouses' Reactivity?

The primary goal of the analyses was to examine whether changes in spouses' stress may be associated with changes in their reactivity to daily relationship experiences. Given that prior research has suggested that stress may interfere with positive relationship functioning, it was predicted that as spouses' stress increased, they would exhibit a stronger covariance between their daily global and specific relationship perceptions, relative to their own average levels of reactivity. To examine the within-person association between stress and reactivity over time, we first computed an index of reactivity for each spouse at each of the three

Table 5  
*Means of Daily Perceptions and External Stress (Study 2)*

Variable	Time 1	Time 2	Time 3
Daily global satisfaction			
Husbands			
<i>M</i>	18.8	19.1	18.4
<i>SD</i>	2.9	2.0	2.5
Minimum	3.0	12.3	9.0
Maximum	21.0	21.0	21.0
Wives			
<i>M</i>	18.9	18.8	18.6
<i>SD</i>	3.0	2.7	2.6
Minimum	3.0	9.0	9.0
Maximum	21.0	21.0	21.0
Daily specific perceptions			
Husbands			
<i>M</i>	53.1	53.4	50.7
<i>SD</i>	8.5	5.9	7.2
Minimum	18.0	36.7	22.0
Maximum	63.0	61.8	61.1
Wives			
<i>M</i>	53.1	53.3	52.2
<i>SD</i>	9.2	6.3	7.0
Minimum	10.0	38.6	26.7
Maximum	63.0	62.4	62.6
External stress			
Husbands			
<i>M</i>	5.2	3.0	3.2
<i>SD</i>	3.5	2.3	2.9
Minimum	0	0	0
Maximum	17.0	9.0	11.0
Wives			
<i>M</i>	5.5	3.2	3.2
<i>SD</i>	3.6	2.6	2.6
Minimum	0	0	0
Maximum	18.0	12.0	10.0

data assessments. To do this, we ran a model identical to the model presented in Study 1 (see Equation 1) at each assessment. As seen in Table 6, on average, daily global and specific perceptions significantly covaried for both husbands and wives at every diary assessment. Moreover, as seen in the last column of the table, results also revealed that there was notable variability across spouses in the extent of this reactivity at each time point. Thus, replicating Study 1, some spouses more than others maintained a daily global satisfaction that was heavily dependent on the perception of positive specific relationship events.

Now that three separate indexes of reactivity were computed for each individual over the 4-year period, the within-person association between reactivity and stress over time was then estimated. Thus, the following HLM model was estimated:

$$\text{Spouse's reactivity} = \beta_{0j} (\text{husbands}) + \beta_{1j} (\text{wives}) \\ + \beta_{2j} (\text{husbands' stress}) + \beta_{3j} (\text{wives' stress}) + \text{error}, \quad (8)$$

where stress was centered within-persons. In this equation  $\beta_{0j}$  and  $\beta_{1j}$  represent spouses' level of reactivity when they are experiencing average levels of stress.  $\beta_{2j}$  and  $\beta_{3j}$ , the main parameters of interest, examine whether changes in spouses' stress were associated with corresponding changes in their reactivity levels. Results

revealed this association was significant for both husbands ( $\gamma_{30} = .005$ ,  $SE = .002$ ),  $t(79) = 2.8$ ,  $p = .007$ ,  $r = .30$ , and wives ( $\gamma_{40} = .005$ ,  $SE = .002$ ),  $t(79) = 2.0$ ,  $p = .05$ ,  $r = .22$ . Consistent with predictions, at times when spouses were experiencing greater levels of external stress than normal, they tended to be more reactive to daily specific experiences within the relationship, relative to their baseline levels of reactivity. Conversely, when spouses were experiencing less stress than normal, they tended to be less reactive to these daily experiences (i.e., their daily global satisfaction was more robust).<sup>3</sup>

### *Do Individual Differences Predict Average Reactivity or the Stress/Reactivity Covariation?*

We next assessed the role of individual difference factors by examining whether spouses' self-esteem and attachment style would predict either spouses' average level of reactivity to daily relationship events across the 4-year period or would moderate the within-person covariation between spouses' stress and their reactivity over time. In other words, as in Study 1, further analyses were conducted to examine whether those lower in self-esteem or higher in anxious attachment may be most likely to exhibit greater reactivity under conditions of stress. To do this, we entered each individual difference factor in a separate analysis at the between-subjects level of the previous analysis. For instance, we examined the role of self-esteem by estimating the following equations:

$$\beta_{0j} \text{ (husbands' average reactivity)} \\ = \gamma_{00} + \gamma_{01} \text{ (husbands' self-esteem)} + \text{error} \quad (9)$$

$$\beta_{1j} \text{ (wives' average reactivity)} = \gamma_{10} + \gamma_{11} \text{ (wives' self-esteem)} \\ + \text{error} \quad (10)$$

$$\beta_{2j} \text{ (husbands' covariation)} = \gamma_{20} + \gamma_{21} \text{ (husbands' self-esteem)} \\ + \text{error} \quad (11)$$

$$\beta_{3j} \text{ (wives' covariation)} = \gamma_{30} + \gamma_{31} \text{ (wives' self-esteem)} \\ + \text{error}, \quad (12)$$

where self-esteem was centered around the mean of the sample. As seen in Table 7, wives' closeness and anxious attachment were marginally associated with their average reactivity over the 4-year period, such that wives lower in closeness and higher in anxiety tended to be more reactive to daily relationship perceptions. Evidence of self-esteem or attachment moderating the strength of the association between reactivity and stress levels was not found for either husbands or wives.

### *Discussion of Study 2*

With the results of multiple diary assessments collected over 4 years, Study 2 examined whether spouses' reactivity to daily specific relationship experiences may have varied over time according to the level of stress spouses were facing at the time. Results revealed that at times when spouses were experiencing higher levels of stress than normal, they engaged in a less adaptive processing of daily relationship experiences, exhibiting a stronger covariation between their daily global satisfaction and their spe-

cific perceptions. Conversely, at times when stress was lower, these same individuals maintained a greater separation between their daily satisfaction and specific experiences. Thus, though person-centered variables like self-esteem and attachment may predispose certain individuals toward a more adaptive processing of daily relationship experiences, these results speak to the importance of recognizing how those general relationship skills may be constrained by changing situational factors found in the couples' environment.

### General Discussion

Maintaining a relationship requires that intimates successfully navigate the ups and downs of daily relationship experiences. To understand when intimates are more or less likely to be reactive to specific relationship experiences, the current article argued that intimates' processing of daily experiences should be influenced by both their stable ability and their immediate capacity to engage in adaptive processing (e.g., Karney & Bradbury, 1995b). In two separate studies of newlywed couples, assessments of spouses' reactivity were derived by examining the within-person covariation between spouses' daily global satisfaction and their daily perceptions of specific relationship aspects over time. Modeling reactivity in this way served to control for spouses' general tendencies to view the overall relationship and their specific relationship experiences in a more or less favorable light when examining moderators of reactivity. Supporting the notion that some spouses more than others may possess a generally better ability to separate their daily global and specific relationship evaluations, some evidence that enduring individual difference factors predict reactivity to specific relationship experiences was found for wives but not for husbands. In Study 1, wives who were lower in self-esteem, higher

<sup>3</sup> We also used a somewhat different analytic strategy to address the hypotheses of Study 2. Namely, data were modeled as a three-level nested structure with HLM (Bryk & Raudenbush, 1992). The within-person covariation between daily global satisfaction and daily specific perceptions across the three diary assessments was modeled at Level 1. Level 2 then modeled the within-person association between this covariation and levels of stress across the three assessments. Finally, in Level 3 the average strength of the association between reactivity and stress across spouses was examined. Specifically, the equations of interest were as follows:

$$\text{Level 1: Daily global satisfaction} = \pi_{0j} + \pi_{1j} \text{ (day)} \\ + \pi_{2j} \text{ (daily specific perceptions)} + \text{error} \\ \text{Level 2: } \pi_{2j} \text{ (i.e., reactivity)} = \beta_{20} + \beta_{21} \text{ (external stress)} + \text{error} \\ \text{Level 3: } \beta_{21} \text{ (i.e., association between reactivity and external stress)} \\ = \gamma_{20} + \text{error}$$

Only the relevant equations are presented here for ease of presentation. However, in the actual model run, at Level 2, stress was entered to predict all the parameters of the Level 1 equation. Likewise, Level 3 included models estimating the average value of all the Level 2 parameters. All results were similar to those presented in the text. Increases in stress were associated with increases in spouses' reactivity to relationship events. Furthermore, further analyses revealed that individual difference factors did not predict average reactivity, nor did they moderate the strength of the association between stress and reactivity.

Table 6  
*Covariance Between Daily Global Satisfaction and Daily Specific Experiences: Evidence for Reactivity Across Three Assessments (Study 2)*

Variable	$\beta$	SE	<i>t</i>	<i>r</i>	$\chi^2$ test for variability <sup>a</sup>
Time 1 (during the first 6 months of marriage)					
Husbands					
Intercept	17.82	0.43	41.3***	.98	103.12***
Slope	-0.07	0.03	-2.5**	.27	67.54*
Reactivity	0.24	0.01	18.1***	.81	136.84***
Wives					
Intercept	19.99	0.42	47.3***	.98	96.0***
Slope	-0.11	0.04	-2.6**	.28	125.46***
Reactivity	0.21	0.01	14.0***	.85	128.83***
Time 2 (2 years later)					
Husbands					
Intercept	19.06	0.29	65.6***	.99	1,020.43***
Slope	0.01	0.04	0.2	.03	75.61***
Reactivity	0.20	0.02	11.1***	.85	97.51***
Wives					
Intercept	19.03	0.32	58.0***	.98	1,266.07***
Slope	0.01	0.04	0.4	.06	80.50***
Reactivity	0.16	0.02	6.9***	.71	131.97***
Time 3 (4 years later)					
Husbands					
Intercept	18.39	0.34	53.9***	.99	1,207.35***
Slope	-0.02	0.03	-0.7	.10	53.06
Reactivity	0.22	0.03	8.0***	.75	208.88***
Wives					
Intercept	18.61	0.35	51.8***	.99	1,499.53***
Slope	0.02	0.03	0.7	.10	52.37
Reactivity	0.23	0.02	10.1***	.82	149.42***

<sup>a</sup> Time 1: *df* = 78; Time 2: *df* = 46; Time 3: *df* = 47. <sup>b</sup> Time 1: *df* = 48, *N* = 49; Time 2: *df* = 43, *N* = 44; Time 3: *df* = 46, *N* = 47.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

in anxious attachment, and less comfortable depending on others engaged in a more maladaptive processing strategy, exhibiting a stronger covariance between their global and specific perceptions over the course of a 7-day diary.

Yet, these effects of person-centered variables not only were inconsistent but also tended to weaken when examining spouses' immediate capacity to engage in a less reactive, adaptive form of relationship processing. Correlations between stress and average daily relationship perceptions revealed that spouses with greater stress reported experiencing more negative daily relationship perceptions. Controlling for spouses' baseline levels of negative experiences, spouses' current stress was also associated with the way in which spouses integrated their daily relationship perceptions with their overall daily satisfaction. Importantly, this pattern of results was found with both observational and self-report measures of stress and with both cross-sectional and longitudinal, within-subjects analyses. Study 1 revealed that, at the between-subjects level, spouses who were rated by observers as having greater levels of external stress exhibited a stronger covariance between their daily global satisfaction and specific relationship experiences. Study 2 highlighted the more immediate and changing influence that stress may have on reactivity by examining whether reactivity varied according to the nature of the external circumstances surrounding the marriage. Consistent with the notion that coping with

greater levels of external stress may deplete spouses of the resources necessary for positive relationship functioning (Baumeister, 2002; Hammond, 2000; McCubbin & Patterson, 1983), at times when spouses were faced with higher levels of stress than normal, they were more reactive to daily relationship experiences.

These results offer additional perspective on the mechanisms through which stress may influence relationship satisfaction. Prior research has argued that stress may affect relationship well-being through two general routes: by increasing the experience of negative relationship events and, independently, by interfering with spouses' capacity to respond to relationship events in an adaptive manner (Neff & Karney, 2004). Supporting this perspective, the current results indicated that when spouses were coping with greater levels of stress, they not only were more prone to experiencing negativity in the relationship, but also exhibited a greater reactivity to those experiences.

These findings have two important implications for understanding the role stress may play in relationship development. First, they suggest that ability alone does not ensure the adaptive processing of relationship information. Clearly, intimates with greater relationship skills should fare better in their relationship over time than those lacking in skills. Nevertheless, it is important to recognize that regardless of the level of ability that intimates possess, they must also have the capacity to engage in adaptive processing, that is, a support-

Table 7  
*Person-Centered Predictors of Average Reactivity and Covariation Between Reactivity and Stress (Study 2)*

Variable	$\gamma$	SE	<i>t</i>	<i>r</i>
Self-esteem ( <i>df</i> = 78)				
Average reactivity				
Husbands	.002	.002	0.76	.09
Wives	.001	.001	0.01	.003
Covariation				
Husbands	-.0001	.001	-0.56	.06
Wives	.0001	.001	0.41	.05
Attachment style: Closeness ( <i>df</i> = 78)				
Average reactivity				
Husbands	.002	.002	0.77	.10
Wives	-.003	.001	-1.69 <sup>†</sup>	.18
Covariation				
Husbands	-.0003	.0004	-0.81	.11
Wives	.001	.0004	1.57	.17
Attachment style: Anxiety ( <i>df</i> = 78)				
Average reactivity				
Husbands	-.001	.002	-0.37	.10
Wives	.003	.001	1.94 <sup>†</sup>	.21
Covariation				
Husbands	.0004	.0004	1.17	.13
Wives	-.0003	.0003	-1.01	.11
Attachment style: Dependence ( <i>df</i> = 78)				
Average reactivity				
Husbands	.0001	.001	0.14	.01
Wives	-.003	.001	-1.62	.18
Covariation				
Husbands	-.0001	.0001	-0.43	.06
Wives	.001	.0004	1.41	.16

<sup>†</sup> *p* < .10.

ive environment within which to exercise their abilities. In other words, ability may be necessary but may not be sufficient for positive relationship functioning. Intimates who generally exhibit positive skills in the relationship may find themselves unable to draw upon those skills under conditions of stress, resulting in satisfaction declines even among initially happy and healthy couples.

Second, these findings suggest how adaptive processing may wax and wane over time. Most research on relationship maintenance strategies has focused on identifying the types of processing strategies that are associated with relationship well-being. There is an extensive literature suggesting that intimates who use particular strategies will sustain greater happiness and that relationships deteriorate when intimates stop using those strategies. Yet, the literature is relatively silent regarding why initially happy intimates may alter the way they process relationship information over time. Acknowledging the role of stress on relationship functioning offers a potential explanation for when adaptive processes may break down, as well as insight into how relationships may sometimes be built up again following periods of unhappiness. If intimates encounter a period of high external stress during the course of a relationship, their adaptive processes may falter, leading to more negative evaluations of the relationship. In this way, prolonged or repeated exposure to high levels of stress may have lasting detrimental effects on the relationship. However, if the stress subsides and intimates can again devote their full resources to engag-

ing in positive relationship maintenance strategies, then relationships have the opportunity to recover.

### *Strengths and Limitations of the Studies*

The current studies contained a number of strengths in their methodology and design that served to enhance our confidence in the results. First and foremost among these strengths, both studies utilized methodologies that serve to limit the possibility of third variables influencing the results. Study 1 relied on observational methods to assess spouses' experiences of external stress. Using observational techniques, rather than self-report methods, ensured that the association between spouses' relationship perceptions and their stress would not be artificially inflated due to shared method variance. Similarly, though Study 2 relied on a self-report measure of stress, within-subject analyses were used to examine the associations between stress and reactivity to daily events over time. These analyses allowed for the estimation of the association between changes in stress and changes in reactivity, controlling for spouses' stable tendencies to view their stress and their relationship in a particular manner. Moreover, rather than relying on spouses' idiosyncratic subjective ratings of the negativity of the stressful events in their lives, we measured stress in Study 2 by simply asking spouses whether a list of concrete, potentially negative events had occurred. Such a measure should serve to limit perceptual biases in spouses' reports. As a final precaution, both of the current studies controlled for several personality factors known to influence spouses' reactivity to daily events when examining the association between stress and reactivity.

Second, Study 2 measured reactivity at three separate time points over a 4-year period, thereby allowing us to examine reactivity as it naturally waxes and wanes over the early years of marriage. To our knowledge, this is the only study to collect multiple diary assessments from the same couples at different points in their relationship. Finally, in contrast to much prior research that has addressed samples varying widely in marital duration, the analyses reported here examined data from a relatively homogeneous sample of couples, reducing the likelihood that the effects observed here result from uncontrolled differences in marital duration. Moreover, the use of a fairly homogeneous sample provided a more conservative test of our hypotheses.

Despite these strengths, there are several limitations to the current studies as well. First, all of the data reported were correlational. Prior theories of stress and relationship functioning have frequently argued that spouses' stress leads to changes in their responses to relationship events (e.g., Bodenmann & Shantinath, 2004). However, two plausible alternative perspectives exist. First, the nature of spouses' marriages may lead to changes in the number of actual stressors they experience. In other words, the experience of having a bad marriage may lead to the experience of more negative events outside the relationship. To limit this possibility, all of the stressors measured in both studies were chosen to represent stresses that are not likely to be a consequence of marital satisfaction. For instance, the events listed on the self-report stress measure used in Study 2 included items such as being unemployed or the death of a family member. While these events may affect spouses' satisfaction, the reverse is less likely to be true. A second alternative is that the experience of a bad marriage may lead to the perception of more external stress, such that unhappy spouses may

simply perceive more external events as being negative. To reduce this possibility, Study 1 relied on observational rather than self-reports of stress. In Study 2, the majority of stressful events listed on the stress measure represented concrete, objective events that are less subject to interpretation. In other words, having a bad marriage is unlikely to lead spouses to perceive that they were fired from their job or that their school application was rejected if these events did not actually occur. Regardless of the direction of the effects, though, these data nevertheless highlight the importance of considering the marital context when examining relationship processes.

Though also an important strength, a second limitation involves the use of a relatively homogeneous sample of happy couples experiencing relatively low levels of stress. This sample should lower power to detect effects. Thus, finding a significant association between stress and spouses' reactivity to daily relationship experiences even within this conservative sample not only serves to enhance our confidence in these findings, but also suggests that even among the happiest of couples, external stress may strain relationship well-being. As the broader stress literature has consistently pointed to the detrimental effects stress can have on marital satisfaction, we expect that in a more heterogeneous sample, the associations between stress and adaptive relationship processes may be similar but even stronger. Nevertheless, generalizations to other samples should be made with caution.

#### *Directions for Future Research*

The current article examined the aggregate effects of stressors spanning several different life domains on spouses' relationship functioning. Thus, this approach focused on the total amount of external stress found in a couple's context and was less concerned with the particular stressors couples must face. Future research may want to examine whether particular types of stressors have a larger influence on marital processes. Though some prior research has examined the influence of a single specific stressor, such as unemployment or health problems, on marital processes, to our knowledge no prior work has directly compared the relative effects of different types of stressors. Identifying the particular stressors that may have the largest and most important impact on relationship functioning may provide a more complete understanding of the processes that shape marital well-being over time.

Future research should also examine whether stress leads spouses to be equally reactive to both positive and negative daily relationship experiences. If stress consumes resources and results in a more simplistic, less nuanced processing of relationship experiences, then stress should be associated with a reactivity to both positive and negative events. Namely, rather than engaging in a differential weighting of positive and negative information (e.g., Neff & Karney, 2003), all incoming information may be taken at face value and seen as indicative of the status of the relationship. Thus, spouses under stress would be especially satisfied on good relationship days and especially unsatisfied on bad relationship days. Alternatively, the negative experience of stress, rather than producing simplistic processing, may result in a maladaptive weighing of relationship information, such that spouses may weigh negative information heavily (i.e., become more reactive to it), while dismissing the significance of positive relationship experiences. In this case, stress may lead to a heightened reactivity to

negative events only. Further attention to these possibilities would help refine theories of stress and relationship functioning.

#### *Conclusions*

Historically, research on relationship maintenance has focused on the effects of intrapersonal factors on adaptive processing by asking who is more likely to possess positive relationship skills. What this perspective overlooks is that the context of the relationship may play just as important a role in shaping intimates' adaptive processing, by affecting when spouses are likely to use those skills. The current studies draw attention to the importance of contextual influences for relationship functioning and suggest that a complete understanding of the processes contributing to relationship well-being cannot be achieved without recognizing the broader circumstances within which those processes take place.

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