

# The Context of Aggressive Behavior in Marriage: A Longitudinal Study of Newlyweds

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Under what circumstances are spouses more or less likely to engage in aggressive behaviors? To address this question, the current study drew on multiple longitudinal assessments of 1st-married newlyweds to examine correlates of within-subject variability in aggressive behavior. Controlling for marital satisfaction, the authors found that spouses were more likely to engage in physical aggression at times when they engaged in higher levels of psychological aggression. Additionally, husbands reporting higher levels of chronic stress were more likely to engage in physical aggression overall and were more likely to engage in physical aggression when they were experiencing higher than average levels of acute stress. These results highlight how demands and supports in the context external to a marriage may affect processes within the marriage.

*Keywords:* newlyweds, intimate partner violence, marital interaction, family stress

Although aggression in intimate relationships is almost universally deplored, it is surprisingly common. In national surveys, between 8% and 21% of couples report physical violence within the last year (Schafer, Caetano, & Clark, 1998). In the early years of marriage, physical aggression appears to be even more prevalent. One third of engaged couples and nearly half of recently married couples have engaged in physical aggression within the last year (Lawrence & Bradbury, 2001; O’Leary et al., 1989). Although the majority of the reported behaviors are relatively mild forms of physical aggression (e.g., slapping, pushing), even mild forms of physical aggression can have significant consequences for the health and well-being of partners (Umberson, Anderson, Glick, & Shapiro, 1998) and have proven to be better predictors of divorce than marital interaction (Rogge & Bradbury, 1999).

A premise of the current study is that efforts to prevent or reduce aggression in intimate relationships will be strengthened by a clearer understanding of the circumstances under which partners are more likely to engage in aggressive acts (see Lawrence & Bradbury, 2001). Expressions of aggressive behavior are likely to fluctuate within couples over time. For example, in a longitudinal study of newly married couples, although physical aggression at one time point was found to increase the probability of aggression at subsequent time points, over 40% of husbands and wives were aggressive at only one or two of three assessments, suggest-

ing some degree of variability in physical aggression over time (O’Leary et al., 1989). Drawing from multiple waves of longitudinal data to describe trajectories of physical aggression over time, Bradbury and Lawrence (1999) showed that partners’ levels of physical aggression varied over time and that partners with the same initial levels of physical aggression may have different rates of change in physical aggression over time.

Recognizing this variability in physical aggression across assessments, there have been calls for longitudinal research to examine the correlates of within-person change in physical aggression over time (Bradbury & Lawrence, 1999). With few exceptions (e.g., Fals-Stewart, 2003), however, research has generally assessed physical aggression at one time point or compared couples from a group known to engage in physical aggression with couples from a group not reporting physical aggression. Such research has proven useful for identifying couples vulnerable to physical aggression, but it has not been able to examine when vulnerable couples are most likely to engage in physical aggression. Addressing this question requires research that obtains multiple assessments of physical aggression and potential correlates of physical aggression over a substantial period in a relationship.

The current study adopts this approach to examine correlates of within-subject variability in physically aggressive behavior among newlywed couples. To pursue this goal, we divide the remainder of the introduction into three sections. The first reviews research on relationship-specific correlates of aggression, focusing in particular on the qualities of marital interactions that are likely to be associated with aggression. The second reviews situational correlates, most notably acute and chronic stressors within the external environment of the marriage. The final section provides an overview of the current study, designed to examine the role

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that these variables play in accounting for within-couple variability in physical aggression over time.

### Relationship-Specific Correlates of Physical Aggression: Psychological Aggression

Physical aggression takes place within an immediate context consisting of other behaviors that partners engage in. Two perspectives have addressed the possible relationship between physical aggression and other relationship behaviors. One perspective suggests that physically aggressive behaviors lie on the most negative end of a continuum of behaviors that include psychologically aggressive behaviors, such as yelling and withdrawal. From this perspective, physical aggression is similar to, if more severe than, other negative conflictual behaviors, a product of negative exchanges that escalate out of control (see Johnson, 1995). It follows from this view that physical aggression should covary with psychological aggression and other nonphysical negative behaviors. That is, partners should be most likely to engage in physical aggression at times when they report relatively high levels of negative interactions.

An alternative view describes physical aggression as distinct from psychological aggression. In this view, the same factors that predict the use of psychological aggression do not necessarily predict physical aggression. Research in this tradition has found that partners' physical, but not psychological, aggression is associated with having higher levels of hostility (Barnett, Fagan, & Booker, 1991) and with having witnessed physical aggression as a child (Stets, 1990). In this view, physical aggression and psychological aggression are seen as distinct categories of negative interaction rather than as different points on the same continuum (see Stets, 1990). This perspective thus allows that the two kinds of behaviors may not covary over time within couples.

Previous research offers tentative support for the first perspective. First, there are nearly no partners who engage in physical but not psychological aggression (Stets, 1990). Second, couples who report psychological aggression are also the most likely to report physical aggression (Margolin, John, & Foo, 1998; O'Leary, 1999), even when marital satisfaction is controlled (Rogge & Bradbury, 1999). Third, reports of psychological aggression predict reports of physical aggression assessed at a later time (Murphy & O'Leary, 1989).

Findings such as these, in which psychological and physical aggression tend to co-occur, raise the possibility that psychological aggression provides an immediate context that makes physical aggression more likely. If this were true, then interventions aimed at reducing psychological aggression in couples might be expected to reduce the likelihood of physical aggression as well. However, the existing research has not examined associations between changes in physical aggression and changes in psychological aggression directly. The current study was designed to address this gap in the literature by directly examining the within-spouse association between psychological and physical aggression across the first years of marriage. On the basis of results of prior between-spouse analyses, we expected that the two forms of aggressive behavior would

covary within spouses, even controlling for marital satisfaction.

### Situational Correlates of Physical Aggression: Acute and Chronic Stress

Just as physical aggression takes place in the context of relationship interactions, those interactions themselves take place within a situational context containing stressors that make demands on the couple. When levels of external stress are relatively low, partners should have more time and more cognitive and emotional resources for effective problem solving. When levels of external stress are relatively high, partners may have less energy available for effective interaction and so may be more likely to engage in maladaptive behaviors.

Indeed, wives who report higher levels of stress before the marriage tend to report more physical aggression within the marriage (MacEwen & Barling, 1988). Research on a nationally representative sample of married and cohabiting couples revealed associations between men's physical aggression and unemployment (Anderson, 2002). Among couples engaging in more serious physical aggression, evidence for associations with stress is even stronger. For example, husbands in a workshop for abusive men reported more stressful life events, and rated those events as more negative, than did a comparison group of nonviolent husbands (Barling & Rosenbaum, 1986). Similar patterns have been found with other comparisons of violent and nonviolent couples (Barnett et al., 1991), and positive associations between level of stress and violence have been found for both men and women (Cano & Vivian, 2003).

However, research on environmental stress and aggression between intimates is limited in at least two ways. First, most of this work has been cross-sectional or has assessed couples at two points in time. Concurrent associations between stress and aggression are open to alternative interpretations (see Cano & Vivian, 2003). Most notably, between-subjects comparisons leave open the possibility that the characteristics of couples that encourage aggressive behavior also generate more life stress. Multiwave longitudinal research would allow stronger conclusions by allowing descriptions of how the presence of physically aggressive behavior covaries with fluctuations in external stress, controlling for average levels of stress. If couples engage in physical aggression during periods of relatively high stress, and the same couples do not engage in physical aggression during periods of relatively low stress, that would provide stronger evidence that changes in stress make maladaptive behaviors more likely. A second limitation is the general failure to distinguish between different kinds of stress. In particular, this research has ignored distinctions between acute stressors, or events with a clear onset and potential offset (e.g., a car accident), and chronic stressors, or enduring circumstances that exert constant demands on couples' time and energy (e.g., poverty). Research suggests that acute and chronic stressors may have categorically different effects on relationships (Karney, Story, & Bradbury, in press).

Acute stress, because it varies over time, should be asso-

ciated with variability in partners' behaviors. As demands on a couple increase, the time and energy available for effective coping should decline, and the tendency to engage in aggressive behaviors should increase. However, when acute stress abates, partners may well return to higher levels of functioning, and so their expressions of aggression should diminish. To our knowledge, previous research has not addressed the possibility that physical aggression covaries with stress at the within-subjects level, but previous research has examined the within-subjects association between stress and other negative behaviors. For instance, Repetti (1989) found, in a 3-day study of workload and stress, that husbands withdrew more from their wives on days when they experienced more stress at work, suggesting that partners may be more likely to engage in negative behaviors at times when they experience more stress. In the current study, we attempted to replicate this sort of result across a longer interval and a broader operationalization of negative behavior. Similar results with respect to physical aggression would suggest that interventions to minimize aggression in relationships address the way partners cope with external stress.

Chronic stress, because it describes a constant level of demand in the lives of couples, may be associated with aggression in other ways. For example, enduring levels of environmental stress may be associated with overall levels of aggression over time. This sort of finding would essentially replicate the overall differences in stress between aggressive and nonaggressive couples observed in prior work (e.g., Cano & Vivian, 2003). In addition to this main effect, however, chronic stress should also moderate how couples react to fluctuating levels of acute stress over time. It has been over half a century since Hill (1949) first proposed that a family's responses to stressful life events depend, in part, on the enduring level of social and material resources that they have to cope with those events. Recent studies of newlyweds confirm that spouses' satisfaction tends to be lower at times when they experience more acute stress (Neff & Karney, 2004). Furthermore, partners' levels of chronic stress have been found to moderate the strength of the within-subject association (Karney, Story, & Bradbury, in press). Among couples experiencing higher levels of chronic stress, changes in acute stressful life events were especially strongly associated with changes in marital satisfaction. With respect to aggressive behaviors, this sort of process leads to the prediction that couples experiencing higher levels of chronic stress may be especially likely to react to increases in acute stress by engaging in psychologically and physically aggressive behavior, controlling for simultaneous effects on marital satisfaction.

### Overview of the Current Study

The goal of the current study was to examine the relationship-specific and situational correlates of within-couple variability in aggression over time. To pursue these issues, we asked a sample of first-married newlywed couples to provide data on their marital interactions and their experience of chronic and acute stress every 6 months for the first 3 years of their marriage. As has been noted

(Bradbury & Lawrence, 1999), newlyweds are often overlooked in research on aggression between intimates, but in fact this is a particularly appropriate population within which to study these issues. Because physical aggression is associated with early divorce (Rogge & Bradbury, 1999), samples of newlyweds are likely to include physically aggressive couples that would no longer be present in samples of more established marriages.

All of the variables analyzed here were assessed by using self-reports, consistent with prior research on physical aggression and stress (e.g., Bradbury & Lawrence, 1999; MacEwen & Barling, 1988; O'Leary et al., 1989). We acknowledge at the outset, however, that spouses' reports may be distorted by memory and self-presentational biases. In the current study, both of these biases would result in underreporting of stress and aggression, making these conservative analyses of the true associations. Nevertheless, to minimize the possible effects of sentiment override (Weiss, 1980), marital satisfaction was controlled in all of the analyses.

The current study addressed three issues. First, we examined the within-spouse associations between psychological and physical aggression. To the extent that psychological aggression forms a relationship-specific context that makes physical aggression more likely, we expected changes in the two forms of aggression to covary within spouses over time, controlling for their associations with marital satisfaction. Second, we examined the within-spouse associations between each kind of aggression and acute stress. To the extent that acute stress is an element of the situational context that makes maladaptive interactions more likely, we expected that both forms of aggression would covary with acute stress over time, again controlling for marital satisfaction. Finally, we examined whether chronic stress accounted for between-spouse variability in overall levels of aggressive behavior and whether chronic stress moderates within-spouse associations among psychological aggression, physical aggression, and acute stress. To the extent that chronic stress represents an enduring drain on the resources of a couple, we expected that couples experiencing higher levels of chronic stress would also experience stronger associations between changes in acute stress and changes in aggression.

## Method

### *Participants*

Newlywed couples were solicited from the community surrounding a large Southeastern university through reviewing marriage licenses and through advertisements in local newspapers. Interested couples were screened to ensure that (a) this was the first marriage for each partner, (b) they had been married for less than 6 months, and (c) neither partner had children. The 82 eligible couples who arrived for their scheduled interview constituted the current sample. On average, husbands were 25.1 ( $SD = 3.3$ ) years old and had completed 16.3 ( $SD = 2.4$ ) years of education. Forty percent were employed full time, and 54% were full-time students in undergraduate or graduate programs. Wives averaged 23.7 ( $SD = 2.8$ ) years old and had completed 16.3 ( $SD = 1.2$ ) years of education. Thirty-nine percent were employed full time, and 50%

were full-time students (for additional details, see McNulty & Karney, 2001).

### Procedure

Couples were scheduled to attend a laboratory session and were mailed a packet of questionnaires to complete at home. Spouses were instructed over the phone and in a letter accompanying the questionnaires to complete their forms independently. In the laboratory, spouses completed additional questionnaires, were interviewed individually, and participated in dyadic interaction tasks that will not be discussed here. At approximately 6-month intervals, couples were mailed questionnaires. At each follow-up, couples were offered \$25 to continue their participation and were reminded to complete their forms independently.

The present analyses examine data from the first through the sixth waves of measurement. At Time 6, marital status was known for 77 (94%) of the original 82 couples. Six (7%) had experienced divorce or permanent separation. At each time point, between 0 (at Time 1) and 30 (37%, at Time 6) participants were missing data for at least one of the measures of interest in the current study. However, the majority of spouses with any missing data (66% of husbands and 67% of wives) were missing data from just one or two times of assessment and so could be included in the multiwave analyses described here.

### Measures

**Marital satisfaction.** To ensure that spouses' reports of their global sentiments toward the marriage were not confounded with their reports of behavior, we asked spouses to indicate their satisfaction with the marriage by using a version of the Semantic Differential (Osgood, Suci, & Tannenbaum, 1957). This measure assesses spouses' global sentiments toward the marriage exclusively. The Semantic Differential asks spouses to rate their perceptions of their relationship on 7-point scales between 15 pairs of opposing adjectives (e.g., bad–good, dissatisfied–satisfied), yielding scores from 15 to 105. In this sample, the internal consistency of this measure was high (coefficient  $\alpha = .98$  for husbands and for wives).

**Physical aggression.** The Violence subscale of Form N of the Conflict Tactics Survey (CTS; Straus, 1979) was used to assess physical aggression. This eight-item subscale assesses the following behaviors: (a) throwing something at the spouse; (b) pushing, grabbing, or shoving the spouse; (c) slapping the spouse; (d) kicking, biting, or hitting with a fist; (e) hitting or trying to hit spouse with something; (f) beating up the spouse; (g) threatening the spouse with a knife or gun; and (h) using a knife or gun. Each spouse was asked to report their use of each behavior during the past year, on a scale from *never* to *more than twice*. The most prevalently reported of these behaviors were the first and the second. Consistent with other investigations (e.g., Murphy & O'Leary, 1989), physical aggression was treated as a dichotomous variable. At each time of assessment, spouses were coded as having reported any or no physical aggression.

**Psychological aggression.** The Verbal Aggression subscale of Form N of the CTS (Straus, 1979) was used to assess psychological aggression. This six-item subscale addresses the following behaviors: (a) insulting or swearing at one's spouse; (b) sulking or refusing to talk about an issue; (c) stomping out of the room, house, or yard; (d) doing or saying something to spite the other; (e) threatening to hit or throw something; and (f) throwing, smashing, hitting, or kicking something. As with the physical aggression scale, each spouse was asked to report how often they had engaged in the behavior during the past year on a 4-point scale ranging from

0 (*never*) to 3 (*more than twice*). Spouses' responses to these behaviors were summed to create a scale score that could range between 0 (indicating none of the behaviors had ever occurred) and 18 (indicating that participants had engaged in each behavior more than twice). Across the six waves of assessment, internal reliability on this scale was adequate for both husbands and wives (mean coefficient  $\alpha = .78$ ).

**Acute stress.** To assess external acute stress at each time point, couples completed a version of the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) designed to assess life events in the previous 6 months. Ninety events were selected from a longer list, with an emphasis on objective events likely to occur in a young, married population. Examples include the following: being passed over for promotion at work, having a school application rejected, and encountering unexpected expenses. Spouses were asked to indicate whether each event had occurred. If it did, spouses then indicated the impact the event had on their lives on a scale ranging from  $-3$  (*extremely negative*) to 3 (*extremely positive*). Each stressful event then had to meet two criteria to be included in the final composite score. First, the event could not represent a likely consequence of marital satisfaction or marital distress. Thus, the measure taps only those stressors external to (i.e., unlikely to be caused by) the marriage. Second, the event had to represent a negative stressor (Turner & Wheaton, 1997). To be included in the final composite score, the event had to be rated by the spouses in this sample as having on average a negative impact each time the item was endorsed. A total of 51 stressful events met these criteria. The final stress score at each assessment was computed by adding together the number of these events the spouse reported had occurred. Thus, stress scores could range from 0 to 51.

**Chronic stress.** To measure chronic stress, we asked spouses to rate their experience in several areas (i.e., relationship with own family, relationship with in-laws, relationship with friends, work experience, school experience, homemaker experience, financial status, health, and spouse's health). At each assessment, spouses rated their experiences in these areas on a 9-point scale, with higher numbers indicating greater stress. Similar measures of chronic stress have been used in previous research (e.g., Booth & Amato, 1991; Karney, Story, & Bradbury, in press).

At the first and the fifth times of assessment, spouses were interviewed individually and asked to describe the same domains featured in the self-report measure. On the basis of spouses' descriptions, interviewers also rated the level of chronic stress experienced by each partner in each domain. At both the interview assessments, interviewers' ratings of chronic stress were significantly correlated with spouses' ratings of chronic stress (Time 1:  $r = .33, p < .01$ , for husbands, and  $r = .71, p < .001$ , for wives; Time 5:  $r = .62, p < .001$ , for husbands, and  $r = .66, p < .001$ , for wives), lending support for the validity of spouses' self-reports. Spouses reported relatively consistent levels of chronic stress across time points (coefficient  $\alpha = .84$  for husbands and  $.89$  for wives), and reports were averaged across assessments to form a single index for each spouse.

## Results

### Descriptive Statistics and Preliminary Analyses

Across the six times of assessment, 24% of husbands and 40% of wives reported having engaged in at least one physically aggressive behavior. At any one assessment, between 5% (at Time 1) and 15% (at Time 5) of husbands and 9% (at Time 6) and 30% (at Time 3) of wives who completed the CTS reported having engaged in at least one physically aggressive behavior. In contrast to the relatively

low rates of physical aggression, 98% of husbands and 96% of wives reported engaging in at least one psychologically aggressive behavior across the study. At any one assessment, between 75% (at Time 6) and 89% (at Time 1) of husbands and 82% (at Time 6) and 89% (at Time 3) of wives who completed the CTS reported having engaged in at least one psychologically aggressive behavior. Husbands' mean scores on the psychological aggression scale ranged from 3.81 ( $SD = 4.23$ , at Time 6) to 5.34 ( $SD = 4.08$ , at Time 1), and wives' mean scores ranged from 4.90 ( $SD = 3.93$ , at Time 5) to 6.43 ( $SD = 4.85$ , at Time 1). A 2 (spouse)  $\times$  6 (time) analysis of variance revealed no significant main effect of time,  $F(5, 30) = 1.53$ ,  $p = .21$ ; and no difference between husbands and wives,  $F(1, 34) = 0.68$ ,  $p = .42$ . Additionally, the interaction between spouse and time was not significant,  $F(5, 30) = 1.18$ ,  $p = .34$ .

### *Physical Aggression and Psychological Aggression: Within-Spouse Associations*

Are partners more likely to engage in physically aggressive behavior at times when they engage in more psychological aggression? To address this question, we modeled the presence or absence of physical aggression at each assessment as a function of marital satisfaction and psychological aggression at that assessment by using Equation 1:

$$\text{Physical aggression} = \beta_{0j} + \beta_{1j} (\text{satisfaction}) + \beta_{2j} (\text{psychological aggression}) + r_{ij},$$

where  $\beta_{0j}$  estimates the expected log-odds of partner  $j$  engaging in physical aggression across assessments;  $\beta_{1j}$  estimates the within-spouse association between physical aggression and satisfaction over time, controlling for the within-spouse association between psychological aggression and physical aggression;  $\beta_{2j}$  estimates the within-spouse association between physical aggression and psychological aggression, controlling for the within-spouse association between satisfaction and physical aggression; and  $r_{ij}$  is the residual variance in the repeated measurements from individual  $j$ , assumed to be independent and normally distributed across subjects. A positive and significant  $\beta_{2j}$  would indicate that, controlling for each spouse's average tendency to engage in physical aggression and for the association between satisfaction and physical aggression, at times when spouses report engaging in higher levels of psychological aggression, they are also more likely to report engaging in physical aggression.

The parameters of this model and all subsequent models were estimated for husbands and wives independently.<sup>1</sup> The average model parameters for the sample are presented in the top two sections of Table 1. From the intercept, on average, across the six waves of the study, the probability of husbands engaging in physical aggression was .15 ( $1/[1 + \exp(\text{intercept})]$ ). On average, across the six waves of the study, the probability of wives engaging in physical aggression was .21. Partners' probabilities of engaging in physical aggression at each time point were not significantly associated with level of satisfaction. However, consistent with

Table 1  
*Within-Spouse Associations With Aggression*

Predictor	Coefficient	SE	<i>t</i>
Presence/absence husbands' physical aggression			
Intercept	-1.74	0.13	-13.17***
Satisfaction	0.01	0.01	1.70
Psychological Aggression	0.06	0.02	2.57**
Presence/absence wives' physical aggression			
Intercept	-1.30	0.22	-6.05***
Satisfaction	0.01	0.01	0.66
Psychological Aggression	0.19	0.05	3.59**
Husbands' psychological aggression and acute stress			
Intercept	4.87	0.41	12.03***
Satisfaction	-0.04	0.01	-2.69**
Acute stress	0.07	0.04	1.70†
Wives' psychological aggression and acute stress			
Intercept	5.80	0.45	12.90***
Satisfaction	-0.03	0.01	-1.86†
Acute stress	0.11	0.03	3.28**
Husbands' acute stress and presence/absence physical aggression			
Intercept	-1.65	0.12	-13.72***
Satisfaction	0.01	0.01	1.40
Psychological Aggression	0.05	0.02	2.14*
Acute stress	0.03	0.03	1.04
Wives' acute stress and presence/absence physical aggression			
Intercept	-1.26	0.14	-9.18***
Satisfaction	0.01	0.01	1.44
Psychological Aggression	0.18	0.04	4.23***
Acute stress	0.02	0.03	0.72

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

expectations, both partners tended to be more likely to engage in physical aggression at times when they had engaged in more psychological aggression.

### *Psychological Aggression and Acute Stress: Within-Spouse Associations*

Are partners more likely to engage in psychological aggression toward each other during periods when they experience relatively high levels of acute stress external to the relationship? To address this question, we modeled self-reported psychological aggression at each assessment as a

<sup>1</sup> In addition to modeling husbands and wives separately, we also examined models in which husbands' and wives' data were included in the same model, following procedures recommended by Raudenbush, Brennan, and Barnett (1995). Because this combined model estimated eight parameters, by using six data points, we did not use it as our primary analysis strategy. However, the results of the combined model were consistent with the results of separate models for husbands and wives with two exceptions. In the combined model, husbands' chronic stress was a marginally significant, rather than statistically significant, moderator of the association between acute stress and physical aggression; wives' chronic stress was not a significant moderator of the association between satisfaction and physical aggression.

function of marital satisfaction and level of acute stress at that assessment by using Equation 2:

$$\text{Psychological aggression} = \beta_{0j} + \beta_{1j} (\text{satisfaction}) + \beta_{2j} (\text{acute stress}) + r_{ij},$$

where  $\beta_{0j}$  estimates the average amount of psychological aggression reported by partner  $j$  across assessments;  $\beta_{1j}$  estimates the within-spouse covariance between psychological aggression and satisfaction, controlling for the association between psychological aggression and acute stress;  $\beta_{2j}$  estimates the within-spouse association between psychological aggression and acute stress, controlling for the within-spouse association between satisfaction and psychological aggression; and  $r_{ij}$  is the residual variance in the repeated measurements from individual  $j$ . A positive and significant  $\beta_{2j}$  would indicate that, controlling for the other parameters in the model, spouses engage in more psychological aggression at times when they experience more acute stress.

The results of this model are presented in the middle two sections of Table 1. The association between satisfaction and psychological aggression was negative and significant among husbands and negative and marginally significant among wives, suggesting that partners were more likely to engage in psychological aggression at times when their marital satisfaction was lower than average. Additionally, the association between acute stress and psychological aggression was positive and marginally significant among husbands and positive and significant among wives, indicating that both partners were, in fact, more likely to engage in psychological aggression at times when they experienced higher levels of acute stress.

### *Physical Aggression and Acute Stress: Within-Spouse Associations*

Independent of associations with psychological aggression, are spouses more likely to engage in physical aggression during periods in which they experience higher levels of acute stress? To address this question, we modeled the presence of physical aggression at each time as a function of marital satisfaction, psychological aggression, and acute stress by using Equation 3:

$$\text{Physical aggression} = \beta_{0j} + \beta_{1j} (\text{satisfaction}) + \beta_{2j} (\text{psychological aggression}) + \beta_{3j} (\text{acute stress}) + r_{ij},$$

in which  $\beta_{0j}$  estimates the expected log-odds of partner  $j$  reporting physical aggression across the six time points and  $\beta_{1j}$ ,  $\beta_{2j}$ , and  $\beta_{3j}$  estimate the within-spouse associations between physical aggression and marital satisfaction, between physical aggression and psychological aggression, and between physical aggression and acute stress, respectively. A positive and significant  $\beta_{3j}$  would indicate that, controlling for the other parameters in the model, spouses are more likely to engage in physical aggression at times when they experience higher levels of acute stress.

The results of these analyses are presented in the bottom two sections of Table 1. As the table reveals, consistent with

the results from Equation 1, the association between satisfaction and physical aggression was not significant for husbands or wives, suggesting that changes in spouses' levels of physical aggression over time were not associated with changes in their levels of satisfaction. Additionally, again consistent with the pattern of results from Equation 1, the association between psychological aggression and physical aggression was positive and significant for spouses, suggesting that both partners were more likely to engage in physical aggression at times when they were engaging in higher levels of psychological aggression. Finally, the within-subjects association between acute stress and physical aggression was not significant for either spouse, suggesting that, controlling for the other variables in the model, spouses were not more likely to engage in physical aggression at times when they were experiencing high levels of acute stress.

### *Chronic Stress: Main Effects and Moderating Effects*

On average across spouses, the within-spouse association between acute stress and physical aggression was not significantly different from zero. However, the strength of this association varied across spouses, raising the possibility that spouses' levels of chronic stress moderated the strength of the association between their level of physical aggression and acute stress. Unlike aggressive behaviors, acute stress, and marital satisfaction, each of which fluctuates over time, chronic stress is presumed to be relatively stable, and indeed was relatively stable in this sample. Thus, chronic stress was analyzed as a between-subjects variable.

To examine chronic stress for its direct associations with levels of physical aggression and for its potential role as a moderator of the within-spouse associations described thus far, we entered chronic stress as a between-subjects predictor of each of the parameters estimated in Equation 3 by using the format of Equation 4:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{chronic stress}) + u_0$$

A similar equation was used to estimate each parameter (i.e.,  $\beta_{1j}$ ,  $\beta_{2j}$ , and  $\beta_{3j}$ ) of Equation 3. In other words, these Level 2 equations examined the associations between participants' chronic stress and their average likelihood of engaging in physical aggression, between their chronic stress and the strength of the association between their satisfaction and their likelihood of engaging in physical aggression, between their chronic stress and the strength of the association between their level of psychological aggression and their likelihood of engaging in physical aggression, and between their chronic stress and the strength of the association between their acute stress and their likelihood of engaging in physical aggression. The coefficients of these associations and the standard errors of these estimates are presented in Table 2. The hypothesis that each association differs from zero was tested with a  $t$  test (see Table 2). To facilitate interpretations of these associations, we also

Table 2  
*Chronic Stress as a Moderator of Associations With Physical Aggression*

Predictor	Coefficient	SE	<i>t</i>	<i>r</i>
Husbands				
Intercept	1.00	0.22	4.59***	.46
Satisfaction	-0.01	0.01	-0.91	.10
Psychological Aggression	0.03	0.03	0.99	.11
Acute stress	0.10	0.04	2.70**	.29
Wives				
Intercept	0.38	0.24	1.59	.18
Satisfaction	-0.02	0.01	-2.04*	.22
Psychological Aggression	-0.02	0.03	-0.55	.06
Acute stress	0.00	0.03	0.05	.01

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

present in Table 2 an effect size,  $r$ , for each association.<sup>2</sup> The effect size  $r$  can be interpreted like a correlation coefficient and represents the degree of linear association between level of chronic stress and the parameters of the within-subject model.

As Table 2 reveals, partners' chronic stress was significantly associated with husbands' average likelihood of physical aggression. Husbands under higher levels of chronic stress were more likely to report that they engaged in physical aggression, on average. Among wives, but not husbands, chronic stress significantly moderated the strength of the association between satisfaction and physical aggression, such that wives with a high level of chronic stress tended to be more likely to engage in physical aggression when their satisfaction was lower.

Did partners' chronic stress level moderate the association between physical aggression and acute stress? From the final row of Table 2 for husbands' and wives' results, it can be seen that the answer is yes for husbands and no for wives. Among husbands, chronic stress was positively associated with the strength of the association between physical aggression and acute stress. Husbands who experienced higher levels of chronic stress were more likely to engage in physically aggressive behavior at times when they experienced higher levels of acute stress. Among wives, chronic stress was not significantly related to the strength of the association between physical aggression and acute stress.

## Discussion

Designing effective interventions to prevent violence between intimates rests on the answers to two questions: Who is mostly likely to engage in aggressive behavior, and when are aggressive behaviors mostly likely to occur? The second question has often been overlooked, leaving the circumstances that give rise to aggressive incidents relatively unknown. The current study was designed to address this gap in the literature by examining the correlates of within-couple variability in aggressive behavior over the 1st years of marriage. Through multiple assessments of psychological and physical aggression over a substantial length of time,

these data represented a unique opportunity to examine the situations that make aggressive behaviors more or less likely, controlling for between-couple differences in average levels of aggression.

Two general hypotheses shaped our approach to these issues. First, levels of aggressive behavior should wax and wane as couples experience varying levels of conflict within the marriage and varying levels of demands external to the marriage. Second, these associations should vary depending on the level of partners' ongoing, chronic stress. Both of these predictions received support. With respect to relationship-specific factors, these data indicate that spouses are more likely to engage in physically aggressive behaviors at times when they have also been engaging in psychologically aggressive behaviors. Thus, the negative but nonphysical behaviors that spouses engage in during their interactions may provide the kindling with which physical aggression can ignite. This result lends credence to the view that physical aggression, at least the relatively low-level physical aggression reported by these couples, may lie at the negative extreme of maladaptive marital interaction, rather than in a distinct category of behavior. Further support for such continuity would justify interventions that attempt to reduce physical aggression by targeting the psychologically aggressive behaviors from which physical aggression may arise. It bears noting, however, that the more severe physical aggression that some have called "intimate terrorism" (Johnson & Ferraro, 2000) may well be categorically distinct from the aggression described by these spouses and should be studied longitudinally in its own right before generalizations about the etiology of those behaviors are made.

With respect to the situational context, spouses in this study reported on the conditions of their lives at every assessment. As expected, psychological aggression covaried positively with acute stress for both spouses, controlling for simultaneous associations with marital satisfaction. When spouses had been experiencing higher than average levels of stress outside the marriage, they reported exchanging more psychologically aggressive behaviors within the marriage. This finding suggests that circumstances that drain partners' emotional resources may make effective interaction more difficult and maladaptive behavior more likely (see also Neff & Karney, 2004). Thus, interventions that improve the external circumstances of marriages may improve the quality of marital interactions even if the interactions themselves are not targeted directly.

Controlling for the effects of acute stress on psychological aggression, we found that acute stress had no direct associations with changes in physical aggression. However, associations between physical aggression and acute stress did emerge when chronic stress was taken into account. Physical aggression was more strongly associated with marital satisfaction for wives reporting high chronic stress than for wives reporting low chronic stress. In other words, when the enduring characteristics of their lives are more demanding and less supportive, wives' expressions of physical

<sup>2</sup>  $r = \sqrt{r^2/(r^2 + df)}$  (Rosenthal & Rosnow, 1991).

aggression are more likely to covary with their perceptions of the relationship as a whole. For husbands, chronic stress moderated the association between physical aggression and acute stress. Husbands who reported relatively high chronic stress were especially likely to engage in physical aggression during intervals characterized by high levels of acute stress. The picture that emerges is that, relative to husbands in environments that are more supportive and less demanding, the physical aggression of husbands under chronic stress is more reactive to acute negative events (cf. Gottman & Levenson, 1992).

The lack of similar patterns of association between chronic stress and physical aggression for wives in the current study is in contrast to previous research, which has found that stress does predict wives' physical aggression. In particular, a study of couples recruited from the community and from couples seeking counseling found level of stress to discriminate between nonviolent, moderately violent, and severely violent wives (Cano & Vivian, 2003). One possible explanation of this discrepancy is that stress may be a better predictor of which wives engage in physical aggression than of when wives engage in physical aggression. A second possibility may stem from the fact that, in the current study, levels of physical aggression were generally lower than those of the participants in Cano and Vivian's (2003) study. It may be that stress is more likely to covary with physical aggression among partners who have higher average levels of physical aggression. If this is the case, the results of the current study may underestimate the association between stress and physical aggression in the broader population.

Overall, these findings highlight the ways that the environment external to the marriage can shape behavior within the marriage. Considering marriages in context thus illuminates not only which couples are more likely to engage in aggressive behaviors but also when aggressive behaviors are more or less likely to occur over the course of the relationship.

Several strengths of the current study enhance our confidence in the results. First, this is one of the few studies that we know of to control for marital satisfaction in all analyses that examine associations between stress and aggressive behavior. Prior studies that have failed to control for marital satisfaction leave open the possibility that associations between aggressive behaviors and other variables arise simply because aggression shares variance with satisfaction. Including marital satisfaction in all analyses effectively ruled out that possibility. Second, the use of multiple waves of longitudinal data allowed us to examine not only how levels of stress and aggression are associated but also how changes in stress and changes in aggression covary over time. Evidence for significant within-spouse associations provide the first evidence that we know of that improving the circumstances of a marriage might lead to declines in aggressive behavior between partners even in the absence of interventions that target the behaviors directly. Third, the use of a relatively homogeneous sample of recently married couples reduces the possibility that the effects reported here are the result of unmeasured differences among spouses.

Despite these strengths, interpretations of the current findings should nonetheless keep in mind several limitations

of this study. First, whereas the homogeneity of this sample enhances confidence in the internal validity of the study, generalizations to other samples should be made with caution. In particular, spouses in the current sample had been married for a relatively short period of time and had relatively high levels of marital satisfaction; it is not clear whether similar results would be obtained among samples of less satisfied couples. Couples who are seriously distressed, for example, may be even more reactive during periods of stress. Severely violent husbands in particular may not respond to stressful events in the same way as nonviolent husbands (e.g., Umberson, Anderson, Williams, & Chen, 2003). Similarly, many of the participants in the current study were undergraduate and graduate students. As a result, they could realistically expect their level of financial stress, for instance, to decline in the future. Consequently, the results of the current study may underestimate the association between this type of stress and physical aggression.

Second, similar to previous research examining aggression in marriage (e.g., Barnett et al., 1991), all of the data examined here were from spouses' self-reports. Some have argued (e.g., O'Leary et al., 1989) that, due to the influence of social desirability concerns, self-reports are likely to underestimate the true amount of aggressive behavior that spouses engage in. In the current study, such biases are less of a threat to our conclusions because the main emphasis was on associations among variables, rather than absolute levels of any one variable. Nevertheless, to evaluate the potential effects of reporting bias, all of the analyses described here were replicated by using partners' reports of each other's behavior (i.e., wives' reports of husbands' behavior and husbands' reports of wives' behavior). The pattern of results from analyzing cross-spouse reports was consistent with findings from analyses of each partner's self-reports, with one exception: Chronic stress was no longer a significant moderator of the association between wives' satisfaction and physical aggression.

Finally, although the multiwave design of the current study is a significant advance over prior cross-sectional and two-wave longitudinal studies of these variables, the 6-month interval between assessments leaves the within-spouse associations described here open to multiple interpretations. For example, whereas the within-spouse association between psychological and physical aggression suggests that physical aggression may arise from psychological aggression that escalates out of control, as measured here the two kinds of behaviors may not have occurred during the same interactions or even during the same day. A daily diary study (see, e.g., Fals-Stewart, 2003), which might be able to specify associations between psychological and physical aggression within specific interactions, would be a natural next step for research on these issues.

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