NIH-PA Author Manuscript
NIH-PA Author Manuscript

Published in final edited form as:
J Soc Clin Psychol. 2009 May ; 28(5): 630–649. doi:10.1521/jscp.2009.28.5.630.

ROMANTIC PARTNERS' COPING STRATEGIES AND PATTERNS OF CORTISOL REACTIVITY AND RECOVERY IN RESPONSE TO RELATIONSHIP CONFLICT

MEREDITH L. GUNLICKS-STOESSEL and **SALLY I. POWERS**
Columbia University College of Physicians & Surgeons

University of Massachusetts at Amherst

Abstract

Stress in close relationships can have significant negative consequences for mental health, physical health, and long-term relationship functioning. Dysregulated physiological responses to stress are potential pathways through which relationship stress may lead to these kinds of outcomes, and the ways in which individuals attempt to cope with relationship stress are likely to impact their physiological responses. However, our understanding of the specific coping strategies that predict physiological reactivity and recovery in these contexts is rather limited. This study explored relations between young adult college students' self-reported methods of coping with stress in their romantic relationships and their physiological reactivity to and recovery from negotiating conflict with their romantic partners. Partners' coping styles were also examined as predictors of physiological stress responses. One hundred and ninety opposite-sex couples (N = 380; modal length of relationship = 1-2 years) participated in an experimental conflict discussion task. Physiological stress reactivity to the task was assessed using salivary cortisol, a primary hormonal product of the hypothalamic-pituitary-adrenocortical (HPA) axis. Growth modeling of the cortisol levels before, during, and after the conflict task indicated that men who typically coped with relationship stress by seeking social support showed greater physiological reactivity to the conflict task. Partners' need for social support predicted stronger stress responses for both men and women, as well. While seeking social support is generally thought to be an adaptive coping strategy for couples, the results suggest that within the context of conflict negotiation in which receiving and providing support may be more difficult, seeking support from a partner is associated with greater phyisological stress.

Disagreements between romantic partners are common occurrences and are a normal part of being in a romantic relationship (McGonagle, Kessler, & Schilling, 1992). Although normal, conflict in close relationships creates physiological stress at the time of conflict events (Kiecolt-Glaser & Newton, 2001). If the stress experienced during these romantic conflicts is not adequately managed through coping strategies, physiological stress levels may be higher and recovery from stress slower, increasing risk for chronic physiological stress associated with poor mental and physical health outcomes (Condren, O'Neill, Ryan, Barrett, & Thakore, 2002; Robles & Kiecolt-Glaser, 2003; Young, Abelson, & Cameron, 2004).

A number of coping strategies have been identified as typical methods of regulating stress (see Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner, Edge, Altman, & Sherwood, 2003 for reviews). Some of the more widely used categories of

Correspondence concerning this article should be addressed to Meredith L. Gunlicks-Stoessel, Columbia University College of Physicians & Surgeons, Division of Child and Adolescent Psychiatry, New York State Psychiatric Institute, 1051 Riverside Drive, Unit 74, New York, NY 10032. GunlickM@childpsych.columbia.edu..

coping include a*ctive coping* (attempts to actively address and modify the problem through problem solving, planning, instrumental action, emotional processing, and emotional expression), *support seeking* (seeking instrumental and emotional support), *distraction* (engagement in pleasurable activities to take one's mind off of stress), and *disengagement* (attempts to evade the stressor and associated emotions through avoidance, withdrawal, and denial; Compas et al., 2001; Skinner et al., 2003). The vast majority of the coping research has asked participants to either report on general coping strategies used across a variety of situations or describe how they coped with any recent stressor, which may vary greatly from participant to participant (Compas et al., 2001). However, it is unlikely that a particular coping strategy will be universally beneficial or detrimental across all types of stressors (Compas et al., 2001). This makes it critically important to clarify how coping strategies are related to regulating stress during specific kinds of events.

The present research examines relations between individuals' coping strategies and their physiological stress responses within the interpersonal context of relationship conflict. Specifically, we examine how young opposite-sex dating couples' strategies of active coping, support seeking, distraction, and disengagement are associated with their physiological stress before, during, and after an experimental romantic conflict discussion task. We also examine whether the coping strategies of individuals' romantic partners predict the stress responses that individuals experience during conflict with their partners. Partners' coping strategies could potentially reduce or heighten physiological stress depending on the extent to which they facilitate successful negotiation of the conflict or interfere with the other person's attempts to cope with the conflict.

The physiological system investigated in this study is the hypothalamic-pituitary-adrenocortical (HPA) axis. In conditions of stress, the HPA system secretes cortisol, an adrenocortical steroid hormone, as a means of mobilizing resources that are required to sustain the physical and psychological activity needed for action. Once the stressor is over, cortisol is responsible for negative feedback regulation of the HPA system, resulting in a decline in cortisol to normal levels. While most individuals will mount a HPA stress response in the face of adversity and will recover afterwards, there is a great deal of heterogeneity in the timing and magnitude of individuals' stress responses (Dickerson & Kemeny, 2004; Miller, Chen, & Zhou, 2007). The HPA system is particularly relevant for understanding physiological responses to relationship conflict because it is most likely to be activated in situations that are characterized by a degree of uncontrollability and the possibility of being negatively evaluated by others (Dickerson & Kemeny, 2004; Miller et al., 2007). It has also been implicated in the development of depression, anxiety, and a number of stress-related physical illnesses (Chrousos & Gold, 1992; Heim, Ehlert, & Hellhammer, 2000; McEwen, 1998). It has been theorized that the HPA system may play a mediating role in the link between relationship discord and physical and mental health outcomes, given its associations with both (see Robles & Kiecolt-Glaser, 2003 for a review and discussion). However, this link has yet to be demonstrated empirically.

Very little research has examined associations between individuals' coping strategies and their HPA responses to stress, leaving only a modest research foundation from which to generate hypotheses about relations between coping strategies and HPA responses to negotiating relationship conflict. Consequently, the current study should be viewed as exploratory in nature. We theorized that use of active coping would facilitate successful negotiation of the conflict discussion and thereby reduce stress. Hence, individuals' own use of active coping and their partners' use of active coping were expected to be associated with lower cortisol levels during the conflict discussion and quicker recovery afterwards. Use of active coping has been found to be negatively correlated with cortisol reactivity in response to taking an exam (Spangler, Pekrun, Kramer, & Hofmann, 2002). However, its associations with HPA stress responses to interpersonal conflict are unknown.

Support seeking is a particularly salient coping strategy for romantic couples. If an individual reports that he or she tends to cope by seeking social support, the degree to which that coping strategy is likely to be effective in regulating stress is going to depend on the extent to which the romantic partner can provide the desired support. Within the context of relationship conflict, active and potentially heated disagreement could be antithetical to providing one's partner with support. While receiving social support from a romantic partner during a stressor that does not compromise the partner's ability to give support may predict less physiological stress (Kirschbaum, Klauer, Filipp, & Hellhammer, 1995), needing social support during a relationship conflict when the partner is likely to display unsupportive behaviors might be associated with greater stress. Hence, we explored whether individuals who cope by seeking support might mount stronger stress responses during the conflict and show less recovery afterwards. We also expected that partners' support seeking might be associated with greater cortisol reactivity and slower recovery. We expected that a partner's attempts to receive support would compete with the individual's attempts to disagree and assert his or her views, thus creating more stress.

Distraction and disengagement were expected to be associated with HPA stress responses in similar ways since both strategies involve moving away from the stressful event. We theorized that individuals who generally use distraction and disengagement as coping strategies might mount stronger HPA responses to the conflict because being required to engage in a conflict negotiation task would prevent them from completely avoiding the stressor. However, we expected them to recover more quickly after the conflict because once the task was over, they would be able to disengage themselves from the stress through distraction or denial. Partners' use of distraction or disengagement was also expected to be associated with stronger HPA responses, but less recovery, because the partners' attempts to not engage in the discussion might interfere with the individual's attempts to successfully negotiate the dispute. Kiecolt-Glaser and her colleagues examined the impact of husbands' withdrawal and avoidance coping behaviors on their wives' HPA reactivity to marital conflict (Heffner et al., 2006; Kiecolt-Glaser et al., 1996). They found that among newlywed and older couples engaging in conflictual discussions, wives displayed higher levels of cortisol when their husbands withdrew during the conflict in response to their wives' demanding behavior (Heffner et al., 2006; Kiecolt-Glaser et al., 1996). It remains to be seen whether young men that typically use withdrawal or "disengagement" as a generalized coping strategy will have a similar effect on their girlfriends' stress during romantic conflict.

METHOD

PARTICIPANTS

Participants were 190 opposite-sex couples (total of 380 individuals) who had been involved in a relationship for at least 2 months (modal length of relationship = 1-2 years). Three participants' cortisol levels were higher than three standard deviations above the mean. These participants were removed from the analyses, as were their partners. This resulted in a sample size of 374 individuals (187 couples). Participants ranged in age from 18 and 21, with a mean age of 19.2. The ethnicity of the sample was 4.3% Hispanic or Latino, 0.3% American Indian, 5.3% Asian American, 1.3% African American, 86.4% European American, and 2.4% other. Participants were recruited through flyers, posters, and presentations in undergraduate courses at a local university. Each participant received $80 for completion of the study. University students enrolled in psychology courses also received extra credit points, if desired.

PROCEDURE

During data collection at our university laboratory, each participant completed a series of questionnaires, participated in an experimental conflict task with his or her romantic partner that required negotiating a current area of conflict in the relationship, and provided seven saliva samples. Because cortisol levels follow a circadian rhythm, participants were invited into the lab at 4pm, the time of day that cortisol levels are most stable (Kirschbaum & Hellhammer, 1989). In addition, because cortisol levels are lower towards the end of the day, assessing cortisol levels in the late afternoon increased the possibility that changes in cortisol levels due to the experimental interpersonal stressor would be detectable.

Each partner was asked to identify a topic that had been a source of heated and unresolved discussions in the past month. Common topics identified by partners included disagreements about amount of time spent together, differences in level of commitment, dissatisfaction with the other partner's behavior (e.g., alcohol consumption, style of dress, punctuality), differences in beliefs (e.g., religion, political views), and jealousy/concerns about cheating. A researcher randomly selected one of the topics by flipping a coin, and the dyad was asked to spend 15 minutes describing the issue and attempting to come to some sort of resolution to the problem. Each discussion was videotaped without the presence of a researcher in the room.

MEASURES

ASSESSMENT OF HPA STRESS RESPONSE

To measure participants' HPA responses to the conflict negotiation task, seven salivary cortisol samples were collected over the course of the laboratory session. The first sample was collected at the beginning of the session. Cortisol takes 15 to 20 minutes to travel from the adrenal cortex to saliva (Kirschbaum & Hellhammer, 1994). Consequently, the first sample assesses participants' stress hormone levels about 10 to 15 minutes prior to entering the laboratory. This sample measures participants' stress response to the general task of preparing to participate in a psychological study, but not the specific task of negotiating conflict with their romantic partners. The second sample was specifically designed to assess stress reactivity in response to explicit anticipation of conflict negotiation with a romantic partner. The second sample was collected 15 minutes following a detailed description of the conflict negotiation task that noted that "the discussion might take the form of an argument." The third sample was collected 10 minutes after the close of the discussion task and assessed participants' stress levels during the middle of the discussion. Four samples assessing recovery were collected 20, 30, 45, and 60 minutes after the interaction task. In a prior paper, we reported that despite the potential for increased cortisol reactivity to the act of entering the laboratory, there was a significant change in cortisol levels when participants were in the conflict discussion (Powers, Pietromonaco, Gunlicks, & Sayer, 2006).

All samples were assayed for salivary cortisol in duplicate using a highly sensitive enzyme immunoassay (Salimetrics, PA). The test used 25 μl of saliva (for singlet determinations), and it had a lower limit of sensitivity of .003 μg/dl, range of sensitivity from .003 to 1.2 μg/dl, and average intra- and inter-assay coefficients of variation of 4.13% and 8.89%, respectively. Method accuracy of cortisol assays from saliva is typically assessed through tests of spike recovery and linearity. Spike recovery tests whether a known amount of cortisol is measured accurately by the assay method when the known amount is inserted into an existing sample. The acceptable range for spike recovery is 80% to 120%. Linearity signifies method accuracy when testing serial dilutions of samples with known amounts of cortisol. Perfect linearity would be 100%. The spike recovery for our sample was 105% and linearity was 95%.

A number of variables that can affect HPA responses were controlled through the design of the study. Participants were given written and phone instructions to refrain from drinking alcohol, using illegal drugs, or visiting the dentist within the 24 hours prior to coming to the laboratory for their session. They were also directed not to exercise, eat, drink (except water), smoke cigarettes, or brush their teeth up to two hours prior to participation. Upon arrival at the lab, if participants stated that they had been unable to comply with the above restrictions, they were scheduled to return at a later date. In addition, participants rinsed their mouths thoroughly with water 10 minutes before giving the first saliva sample to minimize the potential for saliva contamination.

There were two variables that were statistically controlled: prescribed medication (psychotropic medication, allergy medication, birth control, etc.) and blood contamination. Information regarding use of medication was carefully collected during the study. Participants were given a list of 52 drugs and asked to indicate if they had taken any of the drugs in the past 24 hours. Two of the drugs (women's antibiotic medication and men's allergy medication) were significantly associated with cortisol reactivity and were statistically controlled in all of the analyses. Blood can leak into saliva because of poor oral health, abrasive brushing, or injury. Although precautions against these were taken in screening participation in the study, each participant's first saliva sample was assayed for blood contamination by Salimetrics, LLC using an enzyme immunoassay kit for transferrin. Blood contamination was found to be significantly related to women's cortisol levels and was statistically controlled in all analyses.

ASSESSMENT OF COPING BEHAVIOR

Methods of coping with relationship stress were assessed using two widely used measures: the Brief COPE (Carver, 1997) and the Emotional Approach Coping Scale (Stanton, Kirk, Cameron, & Danoff-Burg, 2000). In this study, the questionnaires' instructions were modified to ask participants how often they used a particular coping strategy to cope specifically with stress in their current romantic relationship. These questionnaires were administered after couples engaged in the conflict negotiation task. The Brief COPE (Carver, 1997) is a shortened version of the COPE (Carver, Scheier, & Weintraub, 1989), a questionnaire frequently used to measure adaptive and problematic coping behavior. It includes the following subscales: Active Coping, Planning, Positive Reframing, Acceptance, Humor, Religion, Using Emotional Support, Using Instrumental Support, Self-Distraction, Denial, Venting, Substance Use, Behavioral Disengagement, and Self-Blame. Each scale consists of two items that are rated on a 4-point Likert scale ranging from 0 (I usually don't do this at all) to 3 (I usually do this a lot). Reliabilities (Chronbach's alpha) for the subscales for the current sample ranged from .52 to .89.

The Emotional Approach Coping Scale (Stanton et al., 2000) assesses coping through attempts to understand and express emotions about a stressful event. Published and author-constructed items were selected to assess emotion-focused coping without including distress-laden items or emotional avoidance items. The measure consists of two scales of 4 items each: Emotional Processing and Emotional Expression. Items are rated on a 4-point Likert scale ranging from 0 (I usually don't do this at all) to 3 (I usually do this a lot). Reliability (Chronbach's alpha) for the sample was .76 for Emotional Processing and .87 for Emotional Expression.

Exploratory and Confirmatory Factor Analyses—Constructs that are assessed by the scales of the two coping questionnaires overlap considerably. Therefore an exploratory factor analysis (EFA) of the items from the two measures was performed using principal components extraction with varimax factor rotation. The scree plot indicated four main factors, each with eigen values greater than one, that explained 58.74% of the variance in the coping measures.[1] The four factors were labeled Active Coping, Support Seeking, Distraction, and Disengagement. Active Coping measures attempts to actively address the relationship stressor by modifying the problem through problem-solving and behavioral action, and/or by identifying, understanding, and expressing their emotions about the stressful event. This factor includes the Brief COPE's Active Coping, Planning, and Venting scales, and the EACS's Emotional Processing and Emotional Expression scales. Support Seeking (Brief COPE's Using Emotional Support and Using Instrumental Support scales) measures the extent to which individuals seek out practical help and emotional support from others to help them COPE with a stressful event. Distraction (Brief COPE's Self-Distraction scale) measures individuals' engagement in pleasurable activities to take their minds off of their distress. Finally, the disengagement scale (Brief COPE's Behavioral Disengagement and Denial scales) assesses individuals' attempts to distance themselves from their negative moods through behavioral disengagement and denial.

A confirmatory factor analysis (CFA) was conducted using LISREL 8.7 (Jöreskog & Sörbom, 2004) to measure the fit of the model derived from the exploratory factor analysis. The goodness-of-fit indices for the model indicated that the model was a good fit: $\chi^2(51) = 182.61$, $p < .001$; RMSEA = .08; CFI = .94; and SRMR = .07. Factor scores were created by averaging across the scores of each factor's indicators.

ANALYTIC STRATEGY

Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) was used to plot the trajectories of participants' cortisol stress responses and to predict variance in these trajectories from participants' own coping styles and their partners' coping styles. HLM creates growth curves for a dependent variable using multiple data points (in this case, cortisol levels over seven time points). An additional important advantage of HLM is that it is able to take into account the interdependent nature of data from couples. In these analyses, the couple is the unit of analysis, with women's cortisol responses and men's cortisol responses nested within the couple. The growth curve modeling specified two linked models. The level 1 model defined three coefficients that characterized participants' curvilinear stress trajectories. These coefficients were allowed to take on different values for each participant. The level 2 model included predictors to explain variance in these level 1 coefficients.

THE LEVEL I HLM MODEL

The level 1 model was represented by the following equation: $Y_{ij} = \beta_{f1j}(\text{girlfriend intercept})_{ij} + \beta_{f2j}(\text{girlfriend linear})_{ij} + \beta_{f3j}(\text{girlfriend quadratic})_{ij} + \beta_{m4j}(\text{boyfriend intercept})_{ij} + \beta_{m5j}(\text{boyfriend linear})_{ij} + \beta_{m6j}(\text{boyfriend quadratic})_{ij} + e_{ij}$. Y_{ij} is the cortisol score i for couple j, with i = 1 . . . 28 data points[2] and j = 1 . . . 187 couples. For women, β_{f1j} is the model intercept. This represents the predicted value of the outcome when the origin of time is zero. Time was rescaled in the models so that the intercept represents the level of cortisol midway through the conflict negotiation task, as assessed by the third sample. B_{f2j} is the linear rate of change, also called the instantaneous rate of change, in cortisol level at time zero. In polynomial functions that include both a linear and quadratic term, the instantaneous rate indicates how fast the curve is changing at a specific point. In the present model, the instantaneous rate of change is estimated at the point at which time is centered. Hence, the linear rate of change in cortisol reflects the extent to which cortisol levels are changing

[1]A table of results of the EFA is available from the authors.

[2]Each partner provided seven saliva samples. Each saliva sample was divided in half, resulting in 14 cortisol samples for each partner, and a total of 28 for the couple.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

(decreasing, increasing, or remaining stable) at the midpoint of the conflict task. B_{f3j} is the rate of the rate of change in cortisol for the entire period of assessment (also called the quadratic effect or curvature of the growth trajectory). It indicates the extent of acceleration or deceleration in cortisol change across the entire trajectory. In these analyses, the quadratic effect represents the change in cortisol levels across all seven cortisol samples. Finally, e is the error, which is assumed to have a mean of zero and a constant variance, σ^2. B_{m4j}, B_{m5j}, and B_{m6j} represent the same parameters for the men's trajectories.

THE LEVEL 2 HLM MODEL

The level 2 model is represented by the following equations:

$$\mathbf{B}_{f1j}=\gamma_{10}+\gamma_{11}+\gamma_{12}+\upsilon_{1j}$$

$$\mathbf{B}_{f2j}=\gamma_{20}+\gamma_{21}+\gamma_{22}+\upsilon_{2j}$$

$$\mathbf{B}_{f3j}=\gamma_{30}+\gamma_{31}+\gamma_{32}+\upsilon_{3j}$$

$$\mathbf{B}_{f4j}=\gamma_{40}+\gamma_{41}+\gamma_{42}+\upsilon_{4j}$$

$$\mathbf{B}_{f5j}=\gamma_{50}+\gamma_{51}+\gamma_{52}+\upsilon_{5j}$$

$$\mathbf{B}_{f6j}=\gamma_{60}+\gamma_{61}+\gamma_{62}+\upsilon_{6}$$

In the level 2 model there is an equation for each level-1 coefficient. The outcome (the beta) is equal to an intercept, plus a predictor, plus a random effect, which represents the residual variance around the fitted model. The linked level 1 and level 2 HLM models present statistical tests of the association of coping styles to cortisol level at the discussion point, the association of coping styles to the rate of change in cortisol at the discussion point, and the association of coping styles to the curvature of the stress trajectory for cortisol across all seven time points.

RESULTS

GROWTH MODELS OF CORTISOL REACTIVITY AND RECOVERY

Before testing the hypothesis that participants' coping strategies and their partners' coping strategies would predict their stress reactivity and recovery to the experimental task, an unconditional HLM model was fit with no predictors at level 2 to determine if there was a substantial amount of variance across individuals in the coefficients defining the cortisol trajectories that was unexplained by the level 1 model, warranting an analysis of predictor variables. Significant individual variation was found in levels of cortisol at the intercept, rates of change in cortisol at the intercept, and the curvature of the entire stress trajectory for both men and women. This significant variation meant that participants did not all respond to the conflict task in the same way and that it was useful to examine whether coping strategies might account for the variance among their stress trajectories.

Men's stress trajectories were predicted by their own need for support (see Table 1). Figure 1 presents two prototypical stress trajectories to illustrate the cortisol levels of men who have a high need for support and men who have a low need for support. The values chosen are the 25^{th} and 75^{th} percentile values of the support distribution. Men who reported high levels of seeking social support showed greater stress reactivity to the conflict task than men who reported low levels of seeking support.

Men's cortisol trajectories were also predicted by their girlfriends' need for support. Figure 2 presents two prototypical stress trajectories to illustrate men's cortisol trajectories as they are predicted by girlfriends' high need for support and low need for support. The values of girlfriends' typical need for support are the 25th and 75th percentile values of the need for support distribution. As with men's own need for support, men whose girlfriends reported high levels of seeking social support mounted a stronger stress response to the conflict task than men whose girlfriends reported that this was not a coping strategy that they typically used.

Women's cortisol trajectories were predicted by their boyfriends' need for support (see Table 2). As compared to women whose boyfriends reported low levels of seeking social support, women whose boyfriends reported high levels of seeking support showed greater HPA reactivity to the conflict (see Figure 3). Neither men's nor women's cortisol trajectories were predicted by their own or their partner's use of active coping, distraction, or disengagement.

DISCUSSION

The findings of this study suggest that romantic couples' need for social support predicts their HPA stress responses over the course of a conflict, and that the sequela of seeking social support within the context of relationship conflict may be somewhat unique. Men mounted stronger stress responses during the conflict if they reported high levels of support seeking to COPE with relationship stress. Within the context of relationship conflict, the usual support that these men rely on receiving from their girlfriends may be removed. Women who are negotiating conflict would be expected to be actively disagreeing, asserting their views, and attempting to achieve their goals. These kinds of behaviors are not likely to be experienced as supportive. Consequently, men who tend to use social support as a means of reducing stress may actually experience greater stress during relationship conflict because the support is harder to get. Receiving social support is thought by some to be one of the most important aspects of couples' coping (Cutrona, Russel, & Gardner, 2005; Lyons, Mickelson, Sullivan, & Coyne, 1998). It has been shown to be related to higher relationship satisfaction (Julien & Markman, 1991), better mental health outcomes (Coyne & Downey, 1991), and better psychological adjustment to physical illness (Revenson, 1994). The present study's results suggest that while using social support is generally a good coping strategy, for men, it may be less effective for managing stressors such as conflict negotiation in which support from a partner is not likely to be readily accessible. A significant relationship between need for social support and HPA reactivity was not found for women. This is consistent with previous work in which gender was found to moderate associations between social support and HPA stress responses (Kirschbaum et al., 1995).

The results of our study also highlight the importance of conceptualizing coping as an interpersonal process, rather than an individual one. Partners' need for social support predicted the physiological stress responses of both men and women. Men and women displayed higher levels of cortisol during the discussion when their partners reported a tendency to need high levels of social support. That is, they experienced greater stress when their partners attempted to elicit support from them during their conflict. Partners' solicitations of support are likely to impede or compete with individuals' engagement in conflictual and self-assertive behaviors. Interference in an individual's attempts to engage in behaviors that they believe will help them negotiate the dispute is likely to lead to a sense of uncontrollability, which has been found to be associated with heightened HPA reactivity (Dickerson & Kemeny, 2004; Miller et al., 2007). In addition, a partner who desires social support, but does not receive it, is likely to be displeased. Negative evaluations, in this case based on the quality and extent of support that the individual was providing, are also consistent triggers of the HPA axis (Dickerson & Kemeny, 2004; Miller et al., 2007).

Reports of tendencies to engage in active coping, distraction, and disengagement by either member of the couple were not related to their HPA stress responses. It may be that the behaviors captured in the active coping, distraction, and disengagement dimensions of the self-report measures did not translate to the actual interpersonal behaviors that couples employed during the conflict negotiation task. Future studies using observational methods are needed to assess the extent to which self-reports of coping are reflective of couples' interpersonal behaviors during conflict negotiation.

Some additional limitations to this study should be noted. This study used a cross-sectional design to determine if romantic couples' coping strategies were associated with physiological stress responses to relationship conflict. Relations between coping and stress reactivity and recovery are likely to be bi-directional. The degree to which an individual displays a strong physiological response to conflict may depend on how he or she emotionally and behaviorally responds, or COPEs, with the interpersonal event (Rutter, 1988). Adaptive coping strategies may reduce stress and thereby reduce physiological stress responses, while maladaptive coping strategies may leave stress unresolved and increase physiological reactivity (Gunnar, 1994). Alternately, individuals' physiological experience of stress may influence the coping strategies that they choose to employ. For example, individuals who are genetically predisposed to experience heightened physiological arousal in response to stress may select coping strategies such as avoidance or withdrawal that will help them to emotionally and physiologically disengage from the stressor (Powers et al., 2006). Longitudinal designs that assess early temperament and typical physiological arousal states, as well as the development of preferred coping strategies, would be ideal for disentangling the reciprocal relations between coping behavior and physiological stress responses.

This study also focused on young couples in dating relationships, and it is possible that the findings may not generalize to older couples in longer, more committed relationships. Couples in longer relationships will have stress reactions to conflict that are based on a long history of shared interaction patterns, and their coping behaviors may have become relatively more automatic over time. It is possible that this greater experience may reduce stress responses. However, it may also be that such routinized patterns require less input from a partner or situation to trigger a strong physiological reaction.

In conclusion, this study demonstrated that seeking social support from a romantic partner during relationship conflict confers greater physiological stress for both the individual seeking the support and his or her partner. These findings suggest that associations between behavioral and physiological processes of regulating relationship stress are complex and depend on the multifaceted interplay between the unique characteristics of the individual, his or her partner, and the demands of the situation.

Acknowledgments

This research was supported by grants R01MH60228 (S. Powers, PI) and F31MH072001 (M. Gunlicks, PI) from the National Institute of Mental Health. Meredith Gunlicks-Stoessel is supported by an Institutional Research Training Grant, T32MH016434. Data collection and management was coordinated in party by Cheryl Bonica, Anne Emilie Smith, Eliza McArdle, Susan Balaban, and Heidemarie Laurent.

REFERENCES

Carver CS. You want to measure coping but your protocol's too long: Consider the Brief COPE. International Journal of Behavioral Medicine. 1997; 4:92–100. [PubMed: 16250744]

Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology. 1989; 56:267–283. [PubMed: 2926629]

Chrousos GP, Gold PW. The concepts of stress and stress system disorders. Journal of the American Medical Association. 1992; 267:1244–1252. [PubMed: 1538563]

Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME. Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. Psychological Bulletin. 2001; 127:87–127. [PubMed: 11271757]

Condren RM, O'Neill A, Ryan MCM, Barrett P, Thakore JH. HPA axis response to a psychological stressor in generalised social phobia. Psychoneuroendocrinology. 2002; 27:693–704. [PubMed: 12084662]

Coyne JC, Downey G. Social factors and psychopathology: Stress, social support, and coping processes. Annual Review of Psychology. 1991; 42:401–425.

Cutrona, CE.; Russel, DW.; Gardner, KA. The relationship enhancement model of social support.. In: Revenson, TA.; Kayser, K.; Bodenmann, G., editors. Couples coping with stress: Emerging perspectives on dyadic coping. American Psychological Association; Washington, DC: 2005. p. 73-95.

Dickerson SS, Kemeny ME. Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. Psychological Bulletin. 2004; 130:355–391. [PubMed: 15122924]

Gunnar, MR. Psychoendocrine studies of temperament and stress in early childhood: Expanding current models.. In: Bates, JE.; Wachs, T., editors. Temperament: Individual differences at the interface of biology and behavior. American Psychiatric Press; New York: 1994. p. 175-198.

Heffner KL, Loving TJ, Kiecolt-Glaser JK, Himawan LK, Glaser R, Malarkey WB. Older spouses' coritsol responses to marital conflict: Associations with demand/withdraw communication patterns. Journal of Behavioral Medicine. 2006; 29:317–325. [PubMed: 16786411]

Heim C, Ehlert U, Hellhammer DH. The potential role of hypocortisolism in the pathophysiology of stress-related bodily disorders. Psychoneuroendocrinology. 2000; 25:1–35. [PubMed: 10633533]

Jöreskog, KG.; Sörbom, D. LISREL 8.7 for Windows. Scientific Software International, Inc.; Lincolnwood, IL: 2004.

Julien D, Markman HJ. Social support and social networks as determinants of individual and marital outcomes. Journal of Social and Personal Relationships. 1991; 8:549–568.

Kiecolt-Glaser JK, Newton TL. Marriage and health: His and hers. Psychological Bulletin. 2001; 127:472–503. [PubMed: 11439708]

Kiecolt-Glaser JK, Newton T, Cacioppo JT, Maccallum RC, Glaser R, Malarkey WB. Marital conflict and endocrine function: Are men really more physiologically affected than women? Journal of Consulting & Clinical Psychology. 1996; 64:324–332. [PubMed: 8871417]

Kirschbaum C, Hellhammer DH. Salivary cortisol in psychobiological research: An overview. Neuropsychobiology. 1989; 22:150–169. [PubMed: 2485862]

Kirschbaum C, Hellhammer DH. Salivary cortisol in psychoneuroendocrine research: Recent developments and applications. Psychoneuroendocrinology. 1994; 19:313–333. [PubMed: 8047637]

Kirschbaum C, Klauer T, Filipp S, Hellhammer DH. Sex-specific effects of social support on cortisol and subjective responses to acute psychological stress. Psychosomatic Medicine. 1995; 57:23–31. [PubMed: 7732155]

Lyons R, Mickelson KD, Sullivan MJL, Coyne JC. Coping as a communal process. Journal of Personal and Social Relationships. 1998; 15:579–605.

Mcewen BS. The neurobiology of stress: From serendipity to clinical relevance. Brain Research. 1998; 886:172–189. [PubMed: 11119695]

McGonagle KA, Kessler RC, Schilling EA. The frequency and determinants of marital disagreements in a community sample. Journal of Social and Personal Relationships. 1992; 9:507–524.

Miller GE, Chen E, Zhou ES. If it goes up, must it come down? Chronic stress and the phyothalamic-pituitary-adrenal axis in humans. Psychological Bulletin. 2007; 133:25–45. [PubMed: 17201569]

Powers S, Pietromonaco P, Gunlicks M, Sayer A. Dating couples' attachment styles and patterns of cortisol reactivity and recovery in response to a relationship conflict. Journal of Personality and Social Psychology. 2006; 90:613–628. [PubMed: 16649858]

Raudenbush, SW.; Bryk, AS. Hierarchical linear models: Applications and data analysis. 2 ed.. Sage; Newbury Park, CA: 2002.

Revenson TA. Social support and marital coping with chronic illness. Behavioural Medicine. 1994; 16:122–130.

Robles TF, Kiecolt-Glaser JK. The physiology of marriage: Pathways to health. Physiology and Behavior. 2003; 79:409–416. [PubMed: 12954435]

Rutter, M. Stress, coping and development: Some issues and some questions.. In: Garmezy, N.; Rutter, M., editors. Stress, coping and development in children. John Hopkins University Press; Baltimore, MD: 1988. p. 1-41.

Skinner EA, Edge K, Altman J, Sherwood H. Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. Psychological Bulletin. 2003; 129:216–269. [PubMed: 12696840]

Spangler G, Pekrun R, Kramer K, Hofmann H. Students' emotions, physiological reactions, and coping in academic exams. Anxiety, Stress and Coping. 2002; 15:413–432.

Stanton AL, Kirk SB, Cameron CL, Danoff-Burg S. Coping through emotional approach: Scale construction and validation. Journal of Personality and Social Psychology. 2000; 78:1150–1169. [PubMed: 10870915]

Young EA, Abelson JL, Cameron OG. Effect of comorbid anxiety disorders on the hypothalamic-pituitary-adrenal axis response to a social stressor in major depression. Biological Psychiatry. 2004; 56:113–120. [PubMed: 15231443]

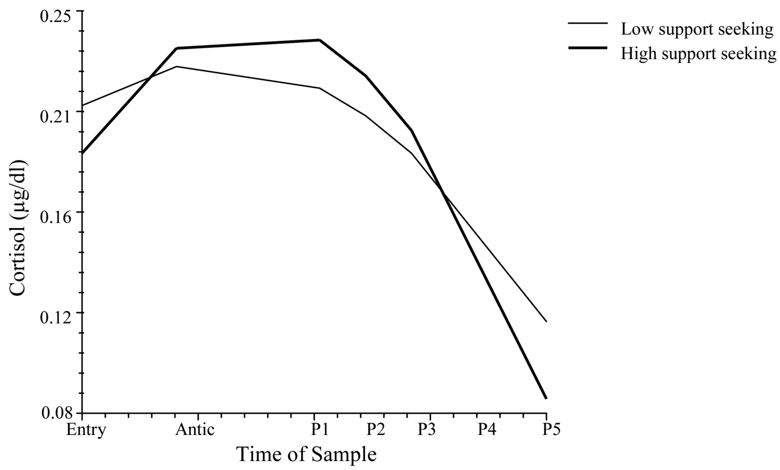

FIGURE 1.

Young men's cortisol trajectories predicted by their own support seeking. Entry = cortisol level immediately prior to entering the lab; Antic = cortisol level in response to vivid description of the upcoming task (anticipatory); P1 = cortisol level during the middle of the task (discussion point); P2 = cortisol level at the end of the task; P3, P4, P5 = cortisol levels during recovery phase.

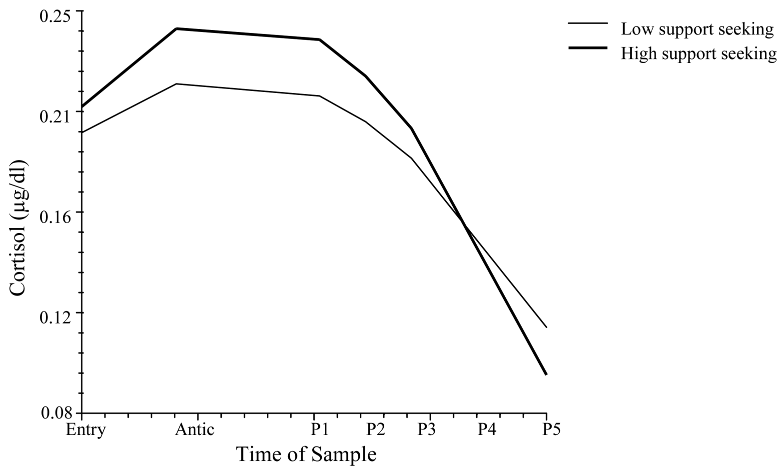

FIGURE 2.
Young men's cortisol trajectories predicted by their girlfriends' support seeking. Entry = cortisol level immediately prior to entering the lab; Antic = cortisol level in response to vivid description of the upcoming task (anticipatory); P1 = cortisol level during the middle of the task (discussion point); P2 = cortisol level at the end of the task; P3, P4, P5 = cortisol levels during recovery phase.

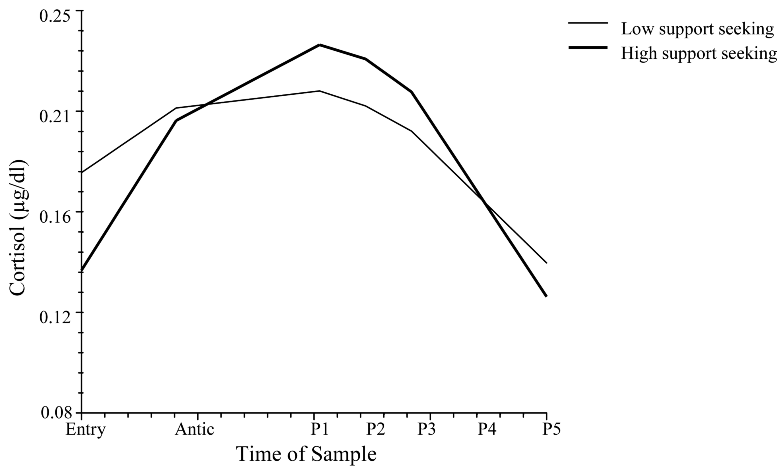

FIGURE 3.

Young women's cortisol trajectories predicted by their boyfriends' support seeking. Entry = cortisol level immediately prior to entering the lab; Antic = cortisol level in response to vivid description of the upcoming task (anticipatory); P1 = cortisol level during the middle of the task (discussion point); P2 = cortisol level at the end of the task; P3, P4, P5 = cortisol levels during recovery phase.

TABLE 1

Estimation of Level 2 Predictors of Young Men's Cortisol Reactivity

Predictor	Estimate	*SE*	*t*-ratio
Men's cortisol level at discussion point			
Intercept	.22	.01	21.17***
Men's allergy medication	.08	.04	1.90[t]
Men's active coping	.01	.09	.84
Men's support seeking	.01	.01	1.02
Men's distraction	.00	.01	-.33
Men's disengagement	.01	.01	.59
Women's active coping	.00	.01	-.57
Women's support seeking	.02	.01	2.42*
Women's distraction	.00	.01	.29
Women's disengagement	.01	.01	.74
Men's rate of change at discussion point			
Intercept	-.06	.01	-8.28***
Men's active coping	.00	.01	-.04
Men's support seeking	.00	.01	-.90
Men's distraction	.00	.01	.60
Men's disengagement	-.01	.01	-.80
Women's active coping	.00	.01	-.11
Women's support seeking	-.01	.01	-1.47
Women's distraction	.01	.01	.87
Women's disengagement	-.01	.01	-.62
Men's curvature across trajectory			
Intercept	-.05	.01	-4.32***
Men's active coping	.01	.01	.89
Men's support seeking	-.02	.01	-2.12*
Men's distraction	-.01	.01	-.68
Men's disengagement	.00	.01	-.32
Women's active coping	.00	.01	.46
Women's support seeking	-.02	.01	-2.78**
Women's distraction	.00	.01	-.09
Women's disengagement	-.01	.01	-.72

[t] $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

TABLE 2

Estimation of Level 2 Predictors of Young Women's Cortisol Reactivity

Predictor	Estimate	*SE*	*t*-ratio
Women's cortisol level at discussion point			
Intercept	.22	.01	20.30***
Women's blood contamination	.08	.02	3.39***
Women's antibiotic medication	.13	.05	2.81**
Women's active coping	.00	.01	-.02
Women's support seeking	.00	.01	.02
Women's distraction	.01	.01	.67
Women's disengagement	-.01	.01	-.73
Men's active coping	-.01	.01	-1.04
Men's support seeking	.01	.01	1.48
Men's distraction	.01	.01	.54
Men's disengagement	.01	.01	.78
Women's rate of change at discussion point			
Intercept	-.02	.00	-4.47***
Women's active coping	.00	.00	1.16
Women's support seeking	.00	.00	-.35
Women's distraction	-.01	.00	-1.19
Women's disengagement	.01	.01	1.00
Men's active coping	-.01	.00	-1.32
Men's support seeking	.01	.00	1.87*t*
Men's distraction	.00	.00	-.26
Men's disengagement	.00	.01	-.74
Women's curvature across trajectory			
Intercept	-.04	.01	-5.28***
Women's antibiotic medication	-.12	.04	-3.14**
Women's active coping	.00	.01	-.67
Women's support seeking	.01	.01	1.12
Women's distraction	.00	.01	-.20
Women's disengagement	.01	.01	.89
Men's active coping	.01	.01	.82
Men's support seeking	-.01	.01	-2.14*
Men's distraction	.00	.01	.21
Men's disengagement	-.01	.01	-.64

t $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.