

When Couples Disconnect: Rumination and Withdrawal as Maladaptive Responses to Everyday Stress

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Previous research has highlighted the importance of examining the interpersonal context of stress and coping. How individuals in a relationship respond to one another and cope with stress together have important outcomes on both individual and dyadic levels. The current study sought to examine 2 deleterious coping responses, rumination and interpersonal withdrawal, as they relate to occupational stress and interact in the home setting. An intensive longitudinal design was employed in a sample of 87 couples in which 1 partner was working as a paramedic. Over a period of 4 consecutive work shifts, daily reports of marital tension, spouses' withdrawal, and paramedics' work stress, burnout, and rumination were collected. Multilevel models incorporating actor and partner effects examined daily associations. Supporting our first and second hypotheses, significant associations were observed between paramedics' work stress and subsequent rumination and withdrawal on the part of paramedics. Paramedics' work-related burnout also predicted increased withdrawal from their respective spouses. Regarding the role of these coping responses in daily marital functioning, paramedics' rumination and spouses' withdrawal were associated with increased marital tension over the 4-day period. On days when spouses withdrew more from the relationship, the associations between paramedics' rumination and both partners' reports of marital tension were greater, supporting our third hypothesis. These findings illustrate the importance of examining both partners' coping responses as they interact to predict marital tension. They further underscore the maladaptive nature of rumination and withdrawal specifically in an interpersonal context. Potential implications for collaborative coping are discussed.

Keywords: burnout, interpersonal withdrawal, marital tension, occupational stress, rumination

Marital relationships involve complex interactions that are continuously influenced by a variety of stress and coping processes, including those which occur in other settings and contexts (Bodenmann, 1995, 2000; Bodenmann et al., 2007; Neff & Karney, 2004; Story & Repetti, 2006). In turn, relationships shape a number of stress-related outcomes on both individual and dyadic levels, most notably stress adaptability and coping effectiveness (O'Brien & DeLongis, 1996; O'Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009). The response of a spouse can have a meaningful impact on one's coping, including the type and effectiveness of strategies engaged (Holtzman, Newth, & DeLongis, 2004; Manne & Zautra, 1989). Such interactive and reciprocal transactions denote a systemic model of dyadic coping. According to Bodenmann, Meuwly, and Kayser (2011), this perspective is more strongly predictive of marital quality than measures of coping congruence and discrepancy in couples.

The consideration of dyadic information has been shown to significantly improve the predictive value of models of coping (Badr, Carmack Taylor, Kashy, Cristofanilli, & Revenson, 2010; Berg & Upchurch, 2007; O'Brien & DeLongis, 1996). In line with this, research on marital quality continues to underscore the importance of acquiring information from both members of the dyad (Whisman, Uebelacker, & Weinstock, 2004). Of the coping strategies studied in couples, rumination and interpersonal withdrawal appear especially deleterious to the daily adjustment of dyads (DeLongis & Holtzman, 2005). Further, these coping strategies have been theorized to interact in a meaningful way so as to exacerbate individual and dyadic functioning (DeLongis, Holtzman, Puterman, & Lam, 2010). It was the goal of the current study to examine the interaction between these maladaptive coping responses in couples and the subsequent impact on marital tension. Rumination is one of the most dysfunctional cognitive strategies in which to engage, whereas withdrawal is one of the most dysfunctional behavioral responses. A highly detrimental pattern of marital interaction can erupt whereby one spouse ruminates and the other withdraws, contributing to a vicious cycle of maladaptive responding (DeLongis et al., 2010).

Rumination is a passive, self-focused, and negatively oriented way of responding to stress. It involves repetitive and persistent thinking about one's feelings and problems, often with negative psychological consequences (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Repetitive thinking that is focused on negative self-related content appears to be the key deleterious component of rumination (Mor &

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Winquist, 2002; Nolen-Hoeksema et al., 2008). Evidence from experimental and prospective studies suggests that an individual's tendency to ruminate about life stressors impairs psychological adjustment and exacerbates depressive symptoms in individuals (Morrow & Nolen-Hoeksema, 1990; Robinson & Alloy, 2003) and in couples (Puterman, DeLongis, & Pomaki, 2010). Despite evidence for rumination as a dispositional trait (Treynor et al., 2003), intensive longitudinal research has documented meaningful within-person variability in rumination on a day-to-day basis (Puterman et al., 2010). Further, studies of state rumination have explained significant variance in negative affect beyond that explained by trait measures of rumination alone (Moberly & Watsons, 2008).

Despite some evidence for short-term benefits following a stressful encounter (DeLongis & Preece, 2002; Repetti, 1989), interpersonal withdrawal has been related to poor psychological adjustment in couples in a number of studies. For example, among couples coping with lung cancer, withdrawing from communication was related to higher distress for both patients and their partners (Badr & Carmack Taylor, 2008). Piotrkowski (1979) also found that repeated withdrawal in response to job stress led to heightened family conflict over time. In combination with other maladaptive responses from one's partner, interpersonal withdrawal has been associated with concurrent and long-term marital dissatisfaction (Heavey, Christensen, & Malamuth, 1995) as well as increased negative affect (King & DeLongis, 2013).

Spouse withdrawal has also been proposed to play an instrumental role in rumination, in so much that rumination can be exacerbated by the withdrawal of one's partner. DeLongis et al. (2010) suggested that without someone there to help an individual disengage from the cyclical processes associated with rumination, there may be a diminished capacity to successfully cope. This was reflected by previous observations of partner support as a buffer to rumination, whereby greater support from one's spouse reduced the impact of rumination on daily mood (Puterman et al., 2010). In a study of work-related rumination, Cropley and Purvis (2003) observed a higher frequency of ruminative thoughts after work when participants were left alone by their family members and friends. It has been suggested that intimate relationships may bolster well-being by helping individuals exit the cycle of rumination once it begins (Watson & Andrews, 2002). If one's partner withdraws, however, the individual is left to his or her own devices, reducing the likelihood of successfully disengaging from the cycle.

There is further evidence to suggest that traumatic experiences may impair engagement in effective coping strategies in couples (Johnson, 2002; Kramer, Ceschi, Van der Linden, & Bodenmann, 2005). According to Bodenmann's (1995, 2000) systemic-transactional model, chronic everyday stress originating outside of the relationship is particularly disruptive to its functioning. Work stress specifically has been documented for its negative impact on relationship-focused coping efforts at home (Repetti, 1989). The current study sought to investigate these interpersonal dynamics (namely, the impact of occupational stress and burnout on subsequent coping efforts at home) in a sample of couples in which one member was regularly exposed to traumatic forms of work stress via employment as a paramedic. It has been estimated that between one fourth and one third of paramedics show traumatic stress symptoms in the high to severe range at any given time (Alexander

& Klein, 2001; Regehr, Goldberg, & Hughes, 2002; Regehr & Millar, 2007). In light of qualitative evidence for an instrumental role of spouses in paramedics' coping (Regehr, 2005), this was an ideal population in which to study the interpersonal context of stress, further facilitating the examination of work-related antecedents of dyadic coping.

The Current Study

With a principal goal of examining rumination and spouse withdrawal as they relate to work stress and marital functioning, we were first interested in understanding contextual influences external to the dyad on coping efforts at home; specifically, work-related antecedents of daily rumination and withdrawal in couples dealing with high levels of work stress. Both theory (Bodenmann, 1995, 2000; Bodenmann et al., 2007) and findings from survey data of couples (Repetti, 1989) have emphasized the importance of work stress in dyadic adjustment.

Hypothesis 1: It was hypothesized that higher levels of work stress and burnout as reported by paramedics would predict higher levels of paramedic rumination. This was supported by previous studies demonstrating increased rumination and an inability to 'unwind' at home resulting from high work stress (Cropley & Purvis, 2003; Kompier, Taris, & van Veldhoven, 2011; Querstret & Cropley, 2012).

Hypothesis 2: Given research demonstrating an impact of occupational stress on marital interaction and satisfaction (Neff & Karney, 2004; Repetti, 1989; Story & Repetti, 2006), as well as evidence for increased interpersonal withdrawal following a stressful workday (Repetti, 1989), it was hypothesized that paramedics' work stress and burnout would predict higher levels of interpersonal withdrawal for both paramedics and spouses. These hypotheses were consistent with findings that highly stressful extramarital experiences impair and/or reduce engagement in effective coping strategies in couples (Kramer et al., 2005).

Next, we sought to examine the extent to which daily rumination and spouse withdrawal were associated with marital tension, a key outcome of impaired dyadic functioning identified by Bodenmann (2000) and examined in previous longitudinal studies of couples' daily coping (O'Brien et al., 2009). Given the proposed moderating role of spouse withdrawal in rumination (DeLongis et al., 2010), we were specifically interested in the association between marital tension and paramedics' rumination in the context of spouses' withdrawal.

Hypothesis 3: Both paramedic rumination and spouse withdrawal were expected to exacerbate paramedics' and spouses' reports of marital tension. This was supported by evidence for maladaptive outcomes of rumination (Morrow & Nolen-Hoeksema, 1990; Puterman et al., 2010; Robinson & Alloy, 2003) and withdrawal (Badr & Carmack Taylor, 2008; King & DeLongis, 2013; Piotrkowski, 1979) on both individual and dyadic levels. Reflecting the model of interaction proposed by DeLongis et al. (2010), it was hypothesized that on days when paramedics ruminated more, the impact on marital tension for both partners would be exacerbated if spouses withdrew more from the relationship.

Coping has been observed to vary by situation, including aspects of one's social environment (O'Brien & DeLongis, 1996). As analytical strategies have evolved, daily process methods (using an intensive longitudinal design; Bolger & Laurenceau, 2013) have proven especially useful in capturing stress and coping as a dynamic and systemic process occurring within a dyadic context (DeLongis & Holtzman, 2005). As such, the current study examined these processes using daily diary methods, obtaining repeated measures from couples over time.

Method

Participants

Target participants included 87 paramedics and their cohabiting spouses. Paramedics were employed in major urban centers in Canada with an average of 15.2 years on the job ($SD = 7.7$). Of these, 82 paramedics self-identified as Caucasian, four as Asian, and one as Hispanic. The mean age of paramedics was 42.1 year ($SD = 8.3$; range = 27 – 62 years) at the time of participation, with the majority of paramedics identifying as male (71). Previous analyses have identified this sample of paramedics as experiencing higher-than-average levels of depressive symptomatology, posttraumatic stress, and professional burnout (King, 2013). Eligibility was contingent upon the participation of a cohabiting romantic partner or spouse during the duration of the study. Of the participating spouses, 79 self-identified as Caucasian, five as Asian, two as First Nations, and one as Latin American. The mean age of spouses was 41.3 years ($SD = 9.2$, range = 24 – 74 years), with the majority being female (75). In total, 72 spouses reported being employed outside the home at the time of participation (56 full-time). Sixty-six participating couples were married, with 55 couples having at least one child living in the home. Average length of relationship was 13.1 year ($SD = 8.7$), whereas average length of cohabitation was 11.6 years ($SD = 8.6$).

To maintain homogeneity, only paramedics working full-time or full-time equivalent hours (minimum four shifts per week) were eligible to participate. To also maintain similar daily diary schedules, all participating paramedics were required to work similar shift patterns at the time of participation (specifically, four consecutive shifts). Paramedics were recruited via brochures and online media (e.g., Facebook). Interested parties were directed to the project Web site where they were able to complete an eligibility application asking basic questions about employment status, work schedule, and relationship status. Cohabiting spouses and romantic partners of paramedics were invited to participate by their significant others, receiving no direct advertisement. Collective eligibility of the couple was determined before confirmation and subsequent direction. Participating paramedics and their spouses each received a \$40 gift card to a local retail establishment of their choice (e.g., Starbucks).

Of the 558 initial inquiries by interested paramedics, only 87 met eligibility criteria and were able to participate in the study. The primary reasons for study exclusion were lack of interest from spouses of interested paramedics (49%), not working four consecutive shifts during the course of the study (46%), and not being in a committed relationship and/or not having a cohabiting spouse (41%). With respect to available information on applicants who did not meet eligibility criteria, the current sample differed signif-

icantly in employment status, with only 53% of total applicants being full-time compared to 94% of the current sample ($\chi^2 = 29.4$, $p < .001$), reflecting our inclusion criteria.

Procedures and Measures

All phases of participation were completed online using a secure server at the University of British Columbia. Questions were made available in online format to improve ease, confidentiality, and privacy of responding. Identifying information was collected only for the purpose of mailing honorariums and was not matched to participant responses. Following the provision of consent, participants completed a short series of online questions about basic demographic information (including age, gender, and ethnicity), length of relationship and cohabitation with partner, and education, training, and experience as a paramedic (where applicable). Participants were contacted by phone to schedule the daily diary phase of the study. Once scheduled and coordinated with both parties, a confirmation e-mail was sent to each participant including a link to the online daily diary questions and detailed instructions.

Information was collected from paramedics and their spouses for a period of four consecutive work shifts (according to the paramedic's schedule). Paramedics answered questions three times daily: (T1) within one to two hours of waking (in reference to "the day so far"); (T2) immediately after work (in reference to their time spent "at work"); and (T3) before bed (in reference to the period of time "since last entry"). Paramedics were not asked to answer any questions during working hours, to avoid interfering with the often sensitive nature of the job. Spouses answered questions twice daily at T1 and T3 only. Participants received clear instructions at study outset (during the initial phone call and via email) regarding the period of time that should be referenced at each entry, to reduce the likelihood of referencing longer periods of time. Diary questionnaires were brief (approximately three to five minutes each) and designed to collect quantitative data via Likert scales. Measures included in the diary are described below. Across the 4 workdays, 82% of paramedics completed at least nine of the 12 time points, with 89% completing eight of the 12 time points. Among spouses, 90% completed at least six of the eight time points, with 94% completing five of the eight time points.

Perceived stress. The abbreviated four-item version of the Perceived Stress Scale (PSS-4; Cohen, Kamarck, & Mermelstein, 1983) was completed by paramedics at T2. The PSS is one of the most widely used measures of perceived stress, with evidence for good reliability and validity in a number of studies (Cohen, Tyrrell, & Smith, 1993). The PSS-4 specifically has been shown to have sound psychometric properties in a large English sample (Warttig, Forshaw, South, & White, 2013). Although the original PSS-4 assesses the degree of perceived stress within the past month, item wording was adjusted to address perceived stress on a daily basis. Items (e.g., feeling "that difficulties were piling up so high that you could not overcome them") were rated on a scale of 0 (*never*) to 4 (*a lot*). The scale has been related to outcome measures of physical health and mood (Cohen et al., 1993), suggesting it is appropriate for addressing the current questions of interest. In the current sample of paramedics, internal reliability estimates were moderate across days, with a mean of .67 (see Table 1). These findings are comparable with Cohen and Williamson's (1988) previously reported alpha of .60 for the PSS-4.

Occupational burnout. Burnout represents one of the most salient maladaptive outcomes of chronic occupational stress (Schaufeli, Leiter, & Maslach, 2009). Maslach, Jackson, and Leiter (1997) argue that it is the interpersonal aspect of burnout that sets it apart from other conceptualizations of work stress. The leading model of burnout comprises three main dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach et al., 1997). To capture daily fluctuations in paramedics' burnout, a daily measure was derived from the Maslach Burnout Inventory – Human Services Survey (MBI-HSS; Maslach, Jackson, & Leiter, 1996) and included at T2. The MBI-HSS is considered the gold standard of burnout measurement (Schaufeli et al., 2009), demonstrating strong psychometric properties in both clinical and nonclinical populations (Maslach et al., 1997; Schaufeli et al., 2009) as well as a consistent and reliable factor structure (Worley, Vassar, Wheeler, & Barnes, 2008).

Based on the magnitude of their factor loadings in previous studies (Vanheule, Rosseel, & Vlerick, 2007; Worley et al., 2008), three items from the MBI-HSS were identified as reliable indicators of burnout, including two measuring emotional exhaustion (*I feel burned out from my work and I feel like I'm at the end of my rope*) and one measuring depersonalization (*I've become more callous toward people*). This reflects a trend in the literature to place primacy on these two aspects of burnout (Worley et al., 2008). Items were then reworded for their use in a daily diary format. The original rating scale of 0 (*not at all*) to 6 (*all of the time*) was maintained as an indicator of the frequency of feelings of burnout during the referenced period of time. Limited previous research has supported the predictive value of daily burnout variability in key outcomes related to the home and family context (Haar, Roche, & Ten Brummelhuis, 2011). Given the interpersonal nature of the depersonalization item and its potential overlap with interpersonal withdrawal, we compared models using the full burnout measure to those that excluded the third item, finding no significant difference in results. Within the current sample of paramedics, this daily measure of burnout displayed a high degree of internal reliability over the 4 days, with an average alpha of .78 (see Table 1).

Coping. At T3, both paramedics and spouses were asked to indicate the extent to which they engaged in rumination and interpersonal withdrawal in response to "the most bothersome event or problem," reflecting previous daily diary methodology employed by DeLongis et al. (2004) to examine coping responses employed by couples in the home setting. State rumination was

measured using three items from the Ruminination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The RRQ has demonstrated good internal reliability and high convergent validity with measures of neuroticism and depression (Trapnell & Campbell, 1999). Items were derived based on the magnitude of factor loadings from analyses by Trapnell and Campbell (1999) and reworded slightly for appropriate temporal references. The final three items included (a) *ruminated or dwelled on things that happened*, (b) *often played back in my mind how I acted in the situation*, and (c) *rehashed in my mind the things I said or did*. Interpersonal withdrawal was measured using the interpersonal withdrawal subscale from the Brief Ways of Coping Inventory (Lee-Baggley et al., 2005). These items referenced the extent to which participants (a) *withdrew from the other person(s) involved*, (b) *gave the other person(s) involved the 'silent treatment'*, and (3) *sulked*. Lee-Baggley et al. (2005) previously demonstrated good internal consistency for these items in daily diary research. All items measuring rumination and withdrawal were rated on a scale of 1 (*not at all*) to 3 (*a lot*), with higher scores representing a higher degree of engagement in each response. In the current sample, daily measures of rumination and withdrawal demonstrated good internal reliability over the four days, with average alphas of .81 and .67, respectively (see Table 1).

Marital tension. Based on previous daily diary research in married couples (Bolger et al., 1989), marital tension was assessed twice daily (once at T1 for daily baseline measures and once at T3) as a marker of daily dyadic functioning. Paramedics and their spouses were asked, "How much tension or conflict has there been with your spouse/romantic partner?" Participants responded on a 5-point Likert scale ranging from 1 (*none*) to 5 (*a lot*). Similar single-item measures have been found to be valid and reliable indicators of marital tension in daily process studies of dyads (Bolger, Stadler, Paprocki, & DeLongis, 2010).

Data Analyses

Hypotheses were tested using hierarchical linear modeling (HLM) software (v6.0; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004), with daily measures nested within couples over time. Using HLM, within-couple variation was modeled at Level 1 and between-couple variation was modeled at Level 2, allowing for simultaneous examination of both sources of variance. A

Table 1
Grand Means (M), Standard Deviations (SD), Internal Reliability Estimates (Cronbach's α), and Paired *t* Tests (2-Tailed) for Daily Measures

Variable	Paramedics <i>M</i> (<i>SD</i>)	Spouses <i>M</i> (<i>SD</i>)	α Range (Average)	<i>t</i> tests
T1 Marital tension	2.16 (.54)	2.11 (.67)	—	<i>p</i> = .03
T2 Perceived stress	.95 (.70)	—	.51–.74 (.67)	—
T2 Burnout	1.36 (1.23)	—	.73–.84 (.78)	—
T3 Rumination	1.44 (.56)	1.45 (.52)	.74–.84 (.81)	<i>p</i> = .68
T3 Withdrawal	1.28 (.46)	1.23 (.42)	.61–.72 (.67)	<i>p</i> = .69
T3 Marital tension	2.37 (.73)	2.33 (.67)	—	<i>p</i> = .28

Note. Grand means are averaged across paramedics' four consecutive workdays; SD reflects between-person SD; where measures consisted of multiple items, scores were averaged across items for ease of comparison. α range refers to the range of internal consistency across the 4 workdays, with the average α reported in parentheses. *t* tests were calculated based on average responses over the 4-day period.

two-intercept approach incorporating actor and partner effects was utilized (with random intercepts and slopes) to better control for the natural nonindependence of the data (Cook & Kenny, 2005). All Level 1 predictor variables were grand-mean centered to preserve variance resulting from the dyad. Centering improves the interpretability of the intercepts to reflect the average response across couples. These decisions were made according to recommendations by Kenny, Kashy, and Cook (2006) for modeling dyadic data.

According to recommendations by Laurenceau and Bolger (2005), paramedic and spouse effects were estimated in the same model for all analyses. For instance, partner effects were included for paramedics' T2 perceived stress and burnout, where variables were created in which paramedics' stress and burnout scores were aligned and entered for their respective spouses. This allowed us to examine associations between paramedic variables and spouse outcomes (and vice versa, where applicable). Interaction terms were calculated for both paramedics and spouses by multiplying Level 1 actor and partner variables of interest. Where T3 marital tension was the outcome variable of interest, T1 actor effects of marital tension were included as controls.

Given the low number of paramedics who were female (and likewise, spouses who were male), paramedic and spouse gender were also entered at Level 2 as controls. All models were also run controlling for shift work (coded 1 for day shift and 2 for night shift) at Level 1 and both length of relationship and length of cohabitation at Level 2. These latter variables were dropped from analyses because of lack of significant effects.

To test the effect of paramedics' T2 perceived stress and T2 burnout on T3 rumination and withdrawal for paramedics and spouses (*Hypotheses 1 and 2*), the following Level 1 work-to-home model was tested incorporating actor and partner effects:

$$\begin{aligned} Y_{ij} = & \hat{a}_{1j} (\text{paramedic}) + \hat{a}_{2j} (\text{spouse}) \\ & + \hat{a}_{3j} (\text{paramedic T2 stress}_{\text{act}}) \\ & + \hat{a}_{4j} (\text{paramedic T2 burnout}_{\text{act}}) \\ & + \hat{a}_{5j} (\text{paramedic T2 stress}_{\text{prt}}) \\ & + \hat{a}_{6j} (\text{paramedic T2 burnout}_{\text{prt}}) + r_{ij} \end{aligned}$$

where Y_{ij} represents the T3 coping response (either rumination or withdrawal) on day i of couple j ; \hat{a}_{1j} is the intercept of paramedic's T3 coping (dummy-coded as 1 for all paramedics and 0 for all spouses); \hat{a}_{2j} is the intercept of spouse's T3 coping (dummy-coded as 1 for all spouses and 0 for all paramedics); \hat{a}_{3j} is the slope, or linear change over time, of the actor effect of paramedic's T2 stress; \hat{a}_{4j} is the slope of the actor effect of paramedic's T2 burnout; \hat{a}_{5j} is the slope of the partner effect of paramedic's T2 stress (i.e., aligned for spouses); \hat{a}_{6j} is the slope of the partner effect of paramedic's T2 burnout; and r_{ij} is the error on day i of couple j .

To examine the association between coping responses and marital tension for both paramedics and spouses (*Hypothesis 3*), as well as the interaction between paramedic rumination and spouse withdrawal, a similar Level 1 model was tested:

$$\begin{aligned} Y_{ij} = & \hat{a}_{1j} (\text{paramedic}) + \hat{a}_{2j} (\text{spouse}) \\ & + \hat{a}_{3j} (\text{paramedic T1 marital tension}_{\text{act}}) \end{aligned}$$

$$\begin{aligned} & + \hat{a}_{4j} (\text{spouse T1 marital tension}_{\text{act}}) \\ & + \hat{a}_{5j} (\text{paramedic T3 rumination}_{\text{act}}) \\ & + \hat{a}_{6j} (\text{paramedic T3 rumination}_{\text{prt}}) + \hat{a}_{7j} (\text{spouse T3 withdrawal}_{\text{act}}) \\ & + \hat{a}_{8j} (\text{spouse T3 withdrawal}_{\text{prt}}) \\ & + \hat{a}_{9j} (\text{paramedic T3 rumination}_{\text{act}} * \text{spouse T3 withdrawal}_{\text{prt}}) \\ & + \hat{a}_{10j} (\text{paramedic T3 rumination}_{\text{prt}} * \text{spouse T3 withdrawal}_{\text{act}}) + r_{ij} \end{aligned}$$

where Y_{ij} represents T3 marital tension on day i of couple j ; \hat{a}_{1j} is the intercept of paramedic's T3 marital tension; \hat{a}_{2j} is the intercept of spouse's T3 marital tension; \hat{a}_{3j} is the slope of the actor effect of paramedic's T1 marital tension (entered as a control); \hat{a}_{4j} is the slope of the actor effect of spouse's T1 marital tension; \hat{a}_{5j} is the slope of the actor effect of paramedic's T3 rumination; \hat{a}_{6j} is the slope of the partner effect of paramedic's T3 rumination; \hat{a}_{7j} is the slope of the actor effect of spouse's T3 withdrawal; \hat{a}_{8j} is the partner effect of spouse's T3 withdrawal; \hat{a}_{9j} is the interaction between the actor effect of paramedic's T3 rumination and the partner effect of spouse's T3 withdrawal; \hat{a}_{10j} is the interaction between the partner effect of paramedic's T3 rumination and the actor effect of spouse's T3 withdrawal; and r_{ij} is the error on day i of couple j .

Regarding power in HLM, Kenny et al. (2006) noted that of the studies examining both members of dyads (to date), the median number of dyads was 101, with as few as 25 in some studies. To attain sufficient power to accurately approximate nonindependence of dyadic data, they recommend a minimum of 44 dyads when running two-tailed tests of between-dyad effects of independent variables (at an alpha of .05). Increasing the number of repeated measures further improves power and reduces the likelihood of Type II error (Kenny et al., 2006). Given these guidelines, it can be concluded that sufficient power was achieved in the current study.

Results

Descriptive statistics for all daily measures and t tests between paramedic and spouse reports are presented in Table 1. Bivariate correlations were calculated using average scores across days. It was revealed that paramedic T2 stress and T2 burnout were significantly correlated ($r = .50, p < .001$). Significant correlations were also observed between T1 and T3 marital tension for both paramedics ($r = .66, p < .001$) and spouses ($r = .29, p < .05$), supporting the inclusion of T1 reports of marital tension as controls in models predicting T3 marital tension. Paramedic and spouse T1 reports of marital tension were significantly correlated ($r = .53, p < .001$), as were paramedic and spouse T3 reports of marital tension ($r = .49, p < .001$). Similarly, significant bivariate relationships were observed between T3 rumination and T3 interpersonal withdrawal for both paramedics ($r = .47, p < .001$) and spouses ($r = .53, p < .001$). A significant correlation was not observed between paramedic rumination and spouse withdrawal, or between paramedic withdrawal and spouse rumination.

Simple models in HLM, however, revealed a significant bivariate association between T3 paramedic rumination (as IV) and T3 spouse withdrawal (as DV; $\beta = .13, SE = .06, p < .05$); and similarly, between T3 spouse withdrawal (as IV) and T3 para-

medic rumination (as DV; $\beta = .17$, $SE = .08$, $p < .05$). Intraclass correlations indicated that 53% of the variance in T2 burnout occurred between couples, compared with 65% of the variance in T2 stress, 13% of the variance in T3 rumination, 16% of the variance in T3 withdrawal, and 22% of the variance in T3 marital tension. In all cases, the use of HLM was justified (Kenny et al., 2006). Results from multilevel models are presented in Tables 2 and 3. Although lagged effects were also examined among key variables, none were significant. Previous day's T2 stress and burnout did not significantly predict next day's marital tension (either T1 or T3), nor did previous day's T3 rumination and withdrawal. Further, previous day's T2 stress and burnout did not significantly predict next day's T3 rumination and withdrawal, even when controlling for previous T3 reports of coping.

Regarding *Hypothesis 1*, paramedics' T2 perceived stress at work demonstrated a significant and positive association with T3 rumination (see Table 2), suggesting that paramedic rumination increased on days when work stress was greater. This effect occurred across the day, such that higher rumination was reported at home subsequent to earlier reports of work stress. T2 burnout did not impact T3 rumination for paramedics, nor did paramedics' T2 work measures have any impact on spouses' T3 rumination.

In examining *Hypothesis 2* and models of interpersonal withdrawal, paramedics' T2 perceived stress at work was associated with increased T3 withdrawal, whereas T2 burnout had no such effect. In contrast, T2 burnout as reported by paramedics demonstrated a significant and positive association with spouses' T3 withdrawal, whereas the effect of paramedics' T2 perceived stress was nonsignificant for spouses. Significant effects occurred across the day, such that higher work stress and burnout reported by paramedics were associated with subsequent reports of paramedics' rumination and spouses' withdrawal (respectively).

With regard to *Hypothesis 3*, paramedics' T3 rumination displayed significant and positive associations with both paramedics' and spouses' concurrent T3 marital tension, controlling for earlier reports of T1 marital tension (see Table 3). T3 marital tension was similarly associated with spouses' concurrent T3 interpersonal withdrawal for spouses, but not for paramedics. With regard to the interaction between paramedics' rumination and spouses' withdrawal, this effect was significant at $p < .01$ for both paramedics and spouses. Paramedics' burnout interacted significantly with spouses' withdrawal to predict increases in both partners' T3 marital tension.

To interpret these interactions, simple slopes were calculated based on procedures outlined by Aiken and West (1991). Points were plotted according to high (+1 SD) and low (-1 SD) levels of paramedics' rumination and spouses' withdrawal, predicting T3 marital tension for paramedics (see Figure 1) and T3 marital tension for spouses (see Figure 2). At higher levels of spouses' withdrawal, the association between paramedics' rumination and paramedics' T3 marital tension appeared to be exacerbated. Paramedics' rumination also appeared to exacerbate spouses' T3 marital tension when spouses' withdrawal was high. No relationship was evident between paramedics' rumination and spouses' T3 marital tension at low spouse withdrawal.

Discussion

The purpose of the current study was to examine the role of work stress and burnout in couples' daily reports of dyadic coping and the subsequent association between coping responses and marital tension. Multilevel analyses offered support for our first hypothesis regarding the impact of work stress and burnout on coping responses in the home. Paramedics' perceived stress at work was associated with subsequent increases in their own levels of rumination and interpersonal withdrawal at home. While paramedics' reports of work stress were not associated with spouses' subsequent reports of rumination, paramedics' burnout at work was associated with subsequent increases in spouses' interpersonal withdrawal. Maslach et al. (1997) have argued that burnout is associated with an impairment or depletion of social resources. Our findings are consistent with this in that spouses appear to pick up on the paramedic's disengagement and need for interpersonal space, and so they too withdraw. Findings further suggest that burnout may be one potential pathway through which work stress crosses over to the spouse and impacts dyadic functioning and coping. Dierdorff and Ellington (2008) noted that jobs of a highly interdependent nature (i.e., characterized by greater reliance on and responsibility for others), like that of a paramedic, are more likely to experience conflict and interference between work and home settings, further supporting this interpretation.

Together, the current findings support Bodenmann's (1995, 2000) systemic-transactional model of stress in couples, in that chronic everyday stress experienced by paramedics was associated with subsequent engagement in maladaptive coping strategies by both members of the couple. Further, our findings indicate that

Table 2
Standardized Regression Coefficients From Multilevel Analyses Predicting T3 Rumination and Interpersonal Withdrawal From Paramedic's T2 Perceived Stress and Burnout at Work

Independent variable	Paramedic effects	Spouse effects
Predicting T3 rumination		
Intercept	$\beta = 1.45^{***}$ ($SE = .20$)	$\beta = 1.46^{***}$ ($SE = .14$)
T2 Paramedic perceived stress	$\beta = .23^{**}$ ($SE = .07$)	$\beta = -.04$ ($SE = .05$)
T2 Paramedic burnout	$\beta = -.03$ ($SE = .04$)	$\beta = .05$ ($SE = .03$)
Predicting T3 interpersonal withdrawal		
Intercept	$\beta = 1.36^{***}$ ($SE = .20$)	$\beta = 1.31^{***}$ ($SE = .10$)
T2 Paramedic perceived stress	$\beta = .13^*$ ($SE = .06$)	$\beta = .04$ ($SE = .05$)
T2 Paramedic burnout	$\beta = .03$ ($SE = .03$)	$\beta = .07^{**}$ ($SE = .02$)

Note. SE = Robust standard error. All models controlled for paramedic gender and spouse gender at Level 2.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Standardized Regression Coefficients From Multilevel Analyses Predicting T3 Marital Tension
for Paramedics and Spouses

Independent variable	Predicting T3 marital tension	
	Paramedic effects	Spouse effects
Intercept		
T1 Marital tension	$\beta = 2.83^{***} (SE = .25)$	$\beta = 2.71^{***} (SE = .09)$
T3 Paramedic rumination	$\beta = .21^{**} (SE = .08)$	$\beta = .37^{**} (SE = .10)$
T3 Spouse withdrawal	$\beta = .59^{***} (SE = .11)$	$\beta = .13 (SE = .08)$
T3 Paramedic Rumination \times Spouse Withdrawal	$\beta = .33^* (SE = .13)$	$\beta = .68^{***} (SE = .15)$
	$\beta = .53^* (SE = .26)$	$\beta = .44^* (SE = .21)$

Note. SE = Robust standard error. All models controlled for paramedic gender and spouse gender at Level 2.

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

these maladaptive responses interact to exacerbate marital tension. This is consistent with previous findings by Kramer et al. (2005) regarding the potential for stressful extramarital experiences to impair and/or reduce engagement in effective coping strategies in couples. Results also support the examination of interactive and reciprocal transactions between spouses to approximate daily indicators of marital quality, reflecting a systemic model of dyadic coping (Bodenmann et al., 2011).

At the bivariate level, paramedics' and spouses' own reports of rumination and withdrawal were positively related. Rumination and withdrawal have been conceptualized as components of a vicious cycle, in which rumination leads to greater withdrawal and continuing engagement in passive coping responses (DeLongis et al., 2010). Our findings support this model; that is, a high correlation may have been observed between rumination and withdrawal because they are exacerbating one another, with rumination leading to negative affect, which in turn allows for further rumination and withdrawal (DeLongis et al., 2010). Given that cross-spousal relationships were also observed between these variables in HLM, a similar feedback loop may be occurring on the dyadic level, such that spouses may be responding to partners' rumination by withdrawing, exacerbating the rumination and leading to further withdrawal.

Because rumination and withdrawal were measured concurrently, however, we are unable to determine either the causal nature of such associations or their specific pathways. Future studies should attempt to disentangle the finer nuances of these

possible associations, with more precise time lagged analyses (i.e., collecting information on more frequent within-day fluctuations in rumination and withdrawal) being one possible means for accomplishing this. Congruence between spouses' reports of rumination and withdrawal should also be of interest in future research, including their role in daily marital functioning. Further, the current study cannot determine whether rumination and withdrawal are two potentially independent coping reactions or, alternatively, whether withdrawal is the behavioral manifestation of a ruminative cognitive response to stress. However, one can certainly imagine a stressed individual ruminating and then, rather than withdrawing from others, seeking support by discussing with others the issue about which he or she is ruminating. Further research is required to address this issue, in addition to better determining and controlling for the content of ruminative thoughts, which could not be accurately determined with the online methodology employed in the current study.

In our analysis of marital tension as an indicator of coping effectiveness on the dyadic level, our hypothesis was well supported. Paramedics' reports of rumination were strongly associated with their own subsequent reports of marital tension over time, while spouses' increased withdrawal was similarly associated with increases in their own marital tension over time. Spouses' withdrawal also demonstrated a significant association with paramedics' reports of marital tension, depicting interpersonal withdrawal as a particularly dysfunctional dyadic response. These findings are consistent with previous evidence for maladaptive outcomes of

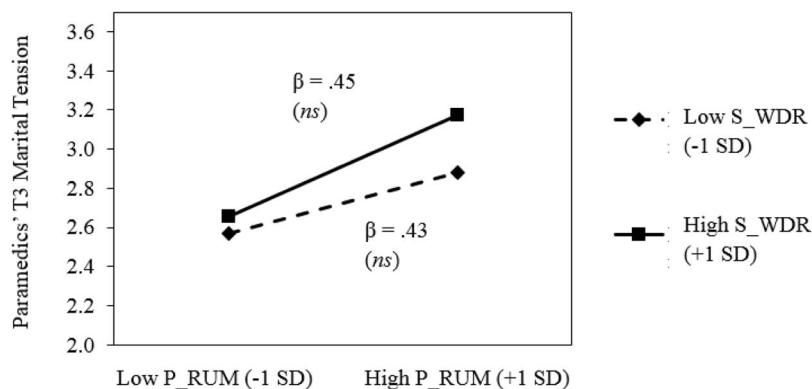


Figure 1. Interaction between paramedics' T3 rumination (P_RUM) and spouses' T3 withdrawal (S_WDR) predicting paramedics' T3 marital tension.

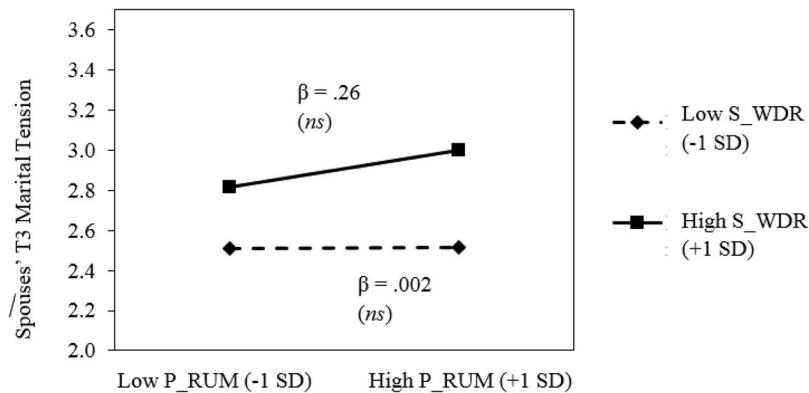


Figure 2. Interaction between paramedics' T3 rumination (P_RUM) and spouses' T3 withdrawal (S_WDR) predicting spouses' T3 marital tension.

rumination (Morrow & Nolen-Hoeksema, 1990; Puterman et al., 2010; Robinson & Alloy, 2003) and withdrawal (Badr, Acitelli, & Carmack Taylor, 2008; King & DeLongis, 2013; Piotrkowski, 1979).

In our investigation of the interaction between paramedic rumination and spouse withdrawal, we observed a significant effect for both paramedics and their spouses. Findings suggest that paramedics' rumination was associated with increases in marital tension, yet this effect was attenuated on days when their spouses withdrew less from the relationship. This is consistent with the moderating role of spouse withdrawal in rumination proposed by DeLongis et al. (2010); that is, that the withdrawal of one's spouse may allow rumination to continue uninterrupted, worsening outcomes over time. It further supports models of collaborative coping (e.g., Acitelli & Badr, 2005; Badr & Acitelli, 2005; Berg et al., 2008) which have argued for the importance of couples to pool resources and solve problems jointly rather than withdraw during times of stress (Berg & Upchurch, 2007). As suggested by DeLongis et al. (2010), the presence of a supportive other with whom one can discuss his or her problems may facilitate resolution of ruminative processes. Whether collaborative coping, support provision, or some other dyadic process is playing a role in these daily relationships should be of interest to future research. Nevertheless, it can be inferred from the current analyses that relationship engagement and taking a "we" approach (Acitelli & Badr, 2005; Badr et al., 2010) during stressful events may be a more effective response for couples than disengagement and withdrawal, even when one spouse's work environment is defined by abnormally high levels of stress. This reflects the larger literature on dyadic coping that has shown positive associations between collaboration and marital adjustment (Badr & Acitelli, 2005; Berg et al., 2008; Bodenmann et al., 2007).

Generalizability of the current findings may be limited to individuals working in emergency, human service, or health-related occupations. Although paramedic and spouse reports were limited by their self-report nature, obtaining repeated measures close to their real-time occurrence helped to reduce potential retrospective contamination (Tennen, Affleck, Coyne, Larsen, & DeLongis, 2006). In interpreting the observed effects of paramedic and spouse reports of withdrawal and rumination, as well as differences in antecedents and outcomes of coping, it is important to

consider the gender composition of the paramedics (82% male) and spouses (86% female) in the current sample. Response patterns may be attributable to differences between husbands and wives or, more generally, between men and women. Findings are further limited by their lack of causal inference, particularly with regard to marital tension as a concurrent marker of coping effectiveness on the dyadic level.

A strength of this study was its examination of both members of the dyad. This allowed us to account for greater variance at within- and between-couple levels, better approximating these processes within an interpersonal context. The current findings help elucidate contextual factors related to two particularly maladaptive coping responses, rumination and interpersonal withdrawal. In addition to documenting extramarital antecedents (i.e., stress and burnout at work) of these responses, we have offered evidence for an interactional effect on marital tension, whereby one spouse's withdrawal appears to exacerbate the impact of the partner's rumination on the dyad. Future research should examine the synergistic effects of other potentially maladaptive coping strategies (e.g., confrontation, denial) on markers of dyadic adjustment, including but not limited to marital tension and satisfaction.

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