

Adult Health in the Context of Everyday Family Life

Rena L. Repetti, Ph.D. · Shu-wen Wang, M.A. ·
Darby E. Saxbe, Ph.D.

Published online: 6 August 2011
© The Society of Behavioral Medicine 2011

Abstract

Background Characteristics of family life are linked both cross-sectionally and prospectively to adult mental and physical health.

Purpose This paper discusses social and biological processes that may explain how families influence the health of their members.

Methods We review naturalistic studies of short-term biopsychosocial processes as they unfold within the family.

Results Day-to-day fluctuations in stressors, demands, and social and emotional experiences in the family are reflected in short-term changes in adult members' affect and in the activity of biological stress-response systems, particularly the hypothalamic–pituitary–adrenal axis.

Conclusions To learn how family environments are linked to health, researchers should study the interlacing of different aspects of the everyday lives of family members, including their physiology, emotions, behavior, activities, and experiences.

Keywords Stress · Health · Family · Couples · Cortisol · Daily · Naturalistic · Spillover · HPA axis

Research on the quotidian details of family life can help us understand social and biological processes that contribute to

family influences on adult health. We know that marital conflict and hostility have an impact on health that is mediated by depression and behaviors like alcohol abuse, as well as cardiovascular, endocrine, and immune system responses [1]. Parent–child relationships act as sources of support and stress for both offspring and parents throughout the lifespan. For example, adults often receive routine help from parents in the form of advice and assistance with childcare or household tasks [2]. On the other hand, caring for disabled elderly parents can exceed caregivers' physical, emotional, and financial resources, which increases their vulnerability to depression and health problems, as well as risk for mortality [3, 4]. The everyday hassles of parenthood have been shown to predict greater psychological distress for parents of younger offspring, above and beyond the effects of nonparenting hassles alone [5]. This paper reviews naturalistic studies of relatively short-term biopsychosocial processes within the family that may contribute to cross-sectional and longitudinal associations between stable family characteristics and mental and physical health. In vivo methods for observing families include direct observations in natural environments as well as repeated reports provided by family members about their daily lives.

This research attempts to model the short-term impact that everyday experiences and events in the family have on an adult's internal psychological state, behavior, and physiology (especially the stress-response systems). It is important to distinguish studies that examine within-subjects or within-couples changes that occur over time from cross-sectional findings that relate family and individual characteristics without considering time-related change. Where studies are available, our review emphasizes within-subjects or within-couples analyses that relate short-term change in one variable, such as a family relationship, with concomitant change in a health-related outcome, such as mood or physiology. Under-

R. L. Repetti (✉) · S.-w. Wang
Department of Psychology, University of California,
Los Angeles (UCLA),
405 Hilgard Avenue,
Los Angeles, CA 90095, USA
e-mail: repetti@psych.ucla.edu

D. E. Saxbe
Department of Psychology, University of Southern California,
SGM 501,
3620 South McClintock Ave.,
Los Angeles, CA 90089-1061, USA

lying this research is the idea that short-term responses that recur on a daily basis can come to influence emotional and physical health processes that are unfolding over much longer time spans. In particular, the repeated activation of psychological and physiological systems designed to respond to immediate stressors may, over time, disrupt the regulation of basal reactivity and recovery processes (i.e., the mounting of arousal responses and return to baseline levels of physiology and emotion following termination of the stressor). Psychological responses to recurring stressors in the family may lead to an accumulation of physiological “hits” that—according to the concept of allostatic load—exact a toll on biological systems, with consequences for the regulation of responses to stress and infection [6].

We begin by reviewing research on emotional well-being and the functioning of biological stress-response systems within the context of the everyday lives of families. We then discuss research on the role that families play in facilitating or interfering with recovery from daily stressors at work. The final literature review section addresses evidence that a married person’s affect and physiology can be influenced by short-term fluctuations in a spouse’s mood, physiology, behavior, and job experiences. We conclude with suggestions for future research in this area. Throughout the paper, we make reference to a study conducted by an interdisciplinary team of scholars at the UCLA Center on the Everyday Life of Families (CELF) who intensively studied a sample of 32 middle-class two-earner families with school-age children [7]. Over the course of 1 week, family members completed diaries, provided saliva samples at multiple time points, and were videotaped as they went about their daily lives. While they were at home, a researcher recorded the members’ locations and activities at 10-min intervals. In addition to the multi-method data collected that week, other information was obtained through questionnaires and interviews, as well as tours, photographs, and floor plans of the home.

Emotional Well-being

Short-term emotional responses to daily experiences at home could, over time, influence the mental health of family members. A growing research literature uses intensive repeated measures to examine how fluctuations in family life—particularly social interaction—are linked to within-subject changes in emotional well-being over the same time period. Studies show, for example, that difficulties with partner relationships correlate with day-to-day changes in the daily mood of both men and women [8]. However, the short-term impact that the negative qualities of intimate relationships have on mental health goes above and beyond the impact on mood. A study of women who were in married or cohabiting relationships

found that their depressive symptoms increased on the weeks they experienced more frequent conflicts and less satisfaction with the relationship. The tie between relationship changes and symptoms of depression persisted even after controls for the women’s weekly moods were included in the analysis [9].

At the same time, positive aspects of the couple relationship, such as a sense of closeness and involvement with each other, have a beneficial effect on the daily mood of both men and women. The simple act of sharing information about a positive event is associated with an improvement in the mood of both members of a couple, the one who disclosed the information as well as the one who received it [10]. Feelings of closeness and other positive feelings about the relationship are connected to short-term declines in negative mood, an effect that may be especially strong when the couple is confronting a stressor [11, 12]. In a diary study of older couples’ daily life, both husbands’ and wives’ mood improved on days when the couple worked together to cope with a daily stressor [13]. In a younger sample of couples, individuals experienced more positive mood and less negative mood on days characterized by equitable support transactions (i.e., when support was provided and received by both partners), whereas negative mood increased on days of inequitable support transactions [14].

Family stressors, such as domestic pressures or the demands of providing assistance to a family member, are also linked with short-term increases in psychological distress [8, 15]. In a daily study of older couples in which one member had diabetes and osteoarthritis, both husbands and wives described more negative mood and less positive mood on days when their ill spouses reported that they had to limit their daily activities as a result of their physical health [16]. Another study found that depressive symptoms increased among caregivers of older relatives when there was an increase in problem behaviors of the elderly family member [17]. Even a stressful physical home environment can influence psychological well-being. For one component of the CELF study, each family member was provided with a video camera and asked to give a tour of his or her home. Mothers who used words like “clutter,” “messy,” or “disorganized” or who referred to their home being “unfinished” or in need of repair or remodel showed greater increases in depressed mood across the day. Those who described their homes as more restorative (who talked more about their yards and outdoor features and who used more words connoting relaxation at home) showed a decline in depressed mood over the course of a day [18].

The research summarized here suggests that fluctuations in everyday family life are linked with changes in mood and well-being. In particular, immediate reactions to minor family stressors include temporary increases in negative mood and depressive symptoms. Recurring emotional

responses to daily stressors may be a part of the process that, over time, connects difficult and demanding family environments, such as marriages that are high in conflict and aggression, to poor mental health. The same emotional reactions also activate biological systems designed to respond to stress. According to the allostatic load model discussed next, these “repeated hits” on regulatory systems ultimately disrupt the ability to respond effectively to challenges, contributing to poor health in the future.

Stress-Response Systems

The hypothalamic–pituitary–adrenal (HPA) axis (and its hormonal end product, cortisol) is a key stress-response system that has been connected to allostatic load. Cortisol is typically released in a diurnal rhythm, with levels peaking within the first hour of awakening, dwindling rapidly over the morning hours, and then gradually decreasing across the afternoon and evening. Allostatic load is thought to be reflected in blunted or flattened diurnal cortisol slopes, indicating compromised stress responding [19]. Blunted slopes have been observed with a range of health outcomes—including chronic stress burden [20], fatigue [21, 22], posttraumatic stress disorder [23], and earlier mortality among breast cancer patients [24]—and are also evident in populations at risk for chronic diseases, such as middle-aged adults with coronary calcification [25], and women with high body mass index [26]. In general, dysregulation of the HPA axis and cortisol output has been associated with a variety of negative health outcomes, including compromised inflammatory and immune functioning, hypertension and cardiovascular disease, shortened longevity, cognitive deficits, mood disorders, and psychosocial disturbances [27]. Given the ties between HPA axis function and physical health, the short-term effects of everyday family life on the HPA axis may be important for understanding the development of health problems within the context of the family.

Social and emotional experiences in the family are reflected in the functioning of the HPA axis, as seen both in daily cortisol secretion and in an individual’s average diurnal cortisol slope. For example, in a sample of German couples, more exchanges of physical affection (e.g., holding hands, hugging, having sexual intercourse) was linked with reduced cortisol secretion that day, an association that was mediated by positive affect [28]. This result is consistent with cross-sectional findings suggesting a connection between an individual’s typical diurnal cortisol slope and marital quality: less positive marital relationships [29] or more marital role concerns [30] and flatter cortisol slopes on one hand, higher marital satisfaction and steeper cortisol slopes on the other hand [31]. The CELF study sampled

salivary cortisol at multiple occasions on three separate weekdays. The mothers who reported being more satisfied in their marriages also had steeper cortisol slopes across the day. Moreover, marital satisfaction moderated the daily connection between their afternoon and evening cortisol levels. There was no tie between the two cortisol levels of the more maritally satisfied women, whereas for less maritally satisfied women, high afternoon cortisol was linked with high evening cortisol [32]. Because all of the women in the CELF study were employed outside of the home, this pattern may indicate that those in unhappy marriages faced more difficulties “unwinding” from work-day stress.

Cross-sectional analyses suggest that the influence that family social experiences have on the HPA axis may not be confined to the couple relationship. The CELF research group videotaped families as they went about their daily lives over the course of a week. The 40 h of video recordings per household have afforded us the opportunity to examine daily social behavior in the family. In one analysis, we employed a thin-slicing approach to systematically code samples of video clips across two weekday evenings. Fathers showed steeper diurnal cortisol slopes when there was less affiliative behavior (i.e., less social engagement) and less emotion—both positive and negative—displayed by themselves and their wives. Mothers, however, showed steeper slopes when they displayed more affiliative behavior (i.e., more social engagement, more talking) with family members. Overall, mothers were observed to be more socially engaged and talkative, as well as more emotionally expressive than fathers [33]. Thus, it appears that social behavior correlates with stress physiology differently for men and women, with men showing better stress recovery profiles when social behavior in the family is less active and engaging, and women showing better profiles when their behavior in the family is more active and engaging.

Family demands on time and energy also relate to functioning of the HPA axis. A study of dual-earner couples found that more time devoted to household work was associated with more cortisol secreted over the course of that day; the same daily effect was observed for the amount of time allotted to paid work [34]. In the CELF study, time allocation patterns were observed by stationing a researcher in families’ homes who recorded the members’ locations and activities at 10-min intervals. We honed in on weekday evenings in order to see how activity patterns were linked with physiological “unwinding” or the drop in cortisol from the afternoon to the evening after work. For both husbands and wives, housework appeared to compromise unwinding: those who spent a higher percentage of their time at home on housework had higher evening cortisol levels and weaker declines in cortisol from afternoon to evening

[35]. Simply having children in the home appears to weaken stress recovery; in a sample of mothers of 2-year-old children, having a greater number of children predicted flatter cortisol slopes, presumably due to the greater challenges and demands that comes with caring for multiple offspring [29]. Another study found that working women with children reported more strain from household demands and also secreted more 24-h cortisol than working women without children [36].

Household duties may be linked with other indicators of physiological arousal as well. In a group of Swedish clerical and managerial employees, female managers were more likely than male managers or male and female clerical workers to report conflict between work and home demands and also described their total workload (combining paid work and household work) as being greater than that of the other groups. In addition, the female managers had physiological profiles consistent with poor unwinding: while the other groups showed decreases in blood pressure, norepinephrine, and cortisol at the end of the day, the female managers showed flat or rising profiles of these indices [37]. A follow-up study of high-ranking managers also found that the women managers reported a higher unpaid workload and more responsibility for household demands and again showed poorer physiological unwinding (based on norepinephrine excretion). The differences in unwinding were especially pronounced among women with children at home [38].

Given the complexities and participant burden posed by procedures to assess diurnal cortisol, it is not surprising that there are few diurnal cortisol studies conducted on multiple days and even fewer tests of associations between daily family events and changes in cortisol secretion. However, the limited available research suggests that physiological patterns are linked to demands and social-emotional experiences in the family, the same category of conditions in the family that predict future physical health. More research of this type is needed in order to understand whether or how daily functioning of stress-response systems, such as the HPA axis, mediates the impact that chronic family stressors have on health.

Unwinding from Daily Job Stress

The home is certainly not the only place where adults are exposed to daily stressful experiences. For instance, chronic job stress appears to increase risk for a host of health problems, including hypertension [39], metabolic syndrome [40], addiction, and chronic fatigue [41]. Both acute work-related stressful experiences as well as more stable structural occupational factors contribute to depressive disorders [42]. For example, a longitudinal study of

working mothers with young children found that a less flexible work environment and greater work pressure predicted higher levels of depressive symptoms even 18 months later [43]. However, these effects are not observed for everyone [44]. In addition to a variety of individual characteristics, family life may be a source of resilience for some adults. The popular image of home as a haven suggests that some adults may recover from the “slings and arrows” of the outside world when they are with their families. Research on daily stressors at work offers one model of how the family may serve as a setting in which recovery from stress can take place.

There is evidence from daily diary studies of short-term carryovers of positive and negative moods from work to home [45, 46]. Daily negative emotion spillover is the process whereby a relatively stressful day at work is followed by more expressions of anger and irritability at home later that evening. For example, a study following 166 couples over 42 consecutive days found a daily link between self-reports of tensions at work and tensions with spouse for husbands, but not for wives [47]. Negative mood spillover has also been detected in samples of dual-earner couples, where husbands and wives have been found to be more impatient, critical, and angry following high-stress workdays [48, 49]. The same phenomenon has been observed in parent-child interactions; both fathers and mothers use more discipline and describe more aversive or angry interactions with their children after stressful workdays [50, 51]. However, daily processes of negative emotion spillover are not observed for everyone, which suggests that some may recover from negative psychological states after returning home from difficult days at work [52]. In one study, the amount of conflict in the family seemed to shape how employed parents responded to stressful days at work. More stressful days at work were followed by increases in angry behavior at home only among the families in which levels of conflict, aggression, and anger were already relatively high. Husbands and wives who returned to low-conflict homes at the end of a stressful day did not show a daily negative emotion spillover effect [48]. This pattern may suggest that positive family relationships facilitate mood recovery after difficult days at work.

We had the chance to observe daily negative emotion spillover in the CELF study's naturalistic video by focusing on the first hour in which employed parents returned home and interacted with family members on two weekdays. More negative emotion with family members was displayed by men employed in jobs that were stressful, but only if those men also scored high on a measure of trait neuroticism (i.e., emotional instability). The men who worked in stressful jobs but had low scores on the neuroticism scale displayed less negative emotion and they

talked less to family members after work [53]. Thus, in addition to positive family relationships, emotional well-being may facilitate mood recovery after a difficult day at work, perhaps in conjunction with a period of social detachment.

In fact, social withdrawal is a common short-term response to daily job stress. In a sample of male air traffic controllers, higher levels of workload (marked by lower visibility and more air traffic volume that day) were followed by a temporary increase in behavioral and emotional withdrawal from wives [54] as well as children [50] that evening after work. Interestingly, higher levels of support from wives augmented the behavioral and emotional withdrawal response to daily workload [54]. Social withdrawal following high-stress workdays has been observed in other samples [11, 48, 49]. For example, self-reports and observations of working mothers' daily reunions with their preschool children at daycare over a week showed that mothers were less talkative and affectionate with children following demanding or socially stressful workdays [51]. Thus, evidence from daily diary studies suggests that a period of social withdrawal may be part of the process through which some family members recover their emotional balance at home after a stressful day at work [55]. A next step for researchers is to examine how behavior after a difficult day is reflected in the concurrent functioning of physiological stress systems in daily life.

At the moment, the limited data on physiological recovery after work presents a complicated picture. In a sample of employed middle-class mothers of toddlers, longer work hours predicted flatter cortisol slopes, suggesting weaker recovery after work for women employed in more demanding jobs [29]. However, a study of male and female teachers found that average cortisol slopes were steeper, suggesting better recovery, among teachers who reported high job demands and low job control [56]. The few relevant findings at the within-subjects level also seem inconsistent: depending on the job stressor, sometimes we see poor recovery after a more difficult day and sometimes we see exaggerated recovery. Marital relationships clearly play a role in the recovery process but how they function is not at all obvious. In the CELF study of dual-earner families, both husbands and wives had steeper cortisol slopes on days with higher workload, suggesting exaggerated recovery after high job stress days, and marital satisfaction seemed to enhance the recovery process after high-workload days among women. However, among the husbands, cortisol slopes were flatter on days with more social stressors at work. In this case, higher levels of marital satisfaction seemed to impede men's recovery from social stressors at work that day [32]. In another recent diary study, both husbands' and wives' momentary worries about work were linked with higher cortisol levels. Among the

women, a closer marital relationship seemed beneficial; wives who were less disclosing of their thoughts and feelings to husbands showed a stronger positive association between momentary work worries and cortisol than those who were highly disclosing [57].

In sum, the available evidence suggests that, for some people or under some circumstances, daily stress carries over from the workplace to the home in the form of more negative mood, greater expressions of anger, and higher cortisol levels. However, for other individuals or under different circumstances, emotional and physiological "unwinding" occurs after work at home. Additional studies that observe physiological arousal and processes of unwinding after high-stress and low-stress days will point to the kinds of behaviors, activities, and interactions in families that facilitate—and those that interfere with—recovery.

Spouse Effects

So far, we have discussed research indicating that both positive and negative social-emotional experiences in the family, as well as family demands on time and energy, are echoed in the daily mood and patterns of cortisol secretion of men and women. In addition, daily spillovers of stress from work to home are sometimes observed; under different circumstances, the home appears to function more as a refuge in which recovery takes place after work. This section focuses on "spouse effects," a term we use to refer to the short-term impact that a spouse's affect, behavior, or experiences has on his or her partner's emotional and physiological state. The research described below suggests that couples "coregulate" or show synchrony in their momentary physiological and emotional states and that a spouse's daily behavior at home and experiences at work can also have a short-term effect on his or her partner's mood and physiology.

Coregulation

One of the best-known studies of hormonal coregulation was conducted by McClintock [58], who found that roommates' menstrual cycles became synchronized over time. Studies of mother-infant pairs, both animal and human, have also suggested a role for dyadic coregulation in organizing infant sleep, eating, and homeostatic mechanisms [59]. While studies of physiological coregulation in daily life are rare, marital conflict researchers have sampled couples' physiological synchrony within the laboratory, for example, during conflict discussion tasks. One of the key findings has been that spouses who appear more strongly physiologically interconnected may be at greater risk for relationship problems, perhaps because

couples who are more reactive to each other are less able to ratchet down from conflict by modulating each others' arousal. This has been called the "negative affect reciprocity" theory [60, 61].

There is also a small but growing literature on coregulation of couples' short-term mood states. In a weeklong daily diary study, couples' "hard" affect states (rated on a scale from angry to calm) covaried, and husbands' "soft" affect (on a scale from sad to upbeat) covaried with wives' soft affect when husbands scored high on perspective taking [62]. Another study found that both positive and negative affective states covaried within cohabiting couples [63]. And, in an 8-day cell phone event sampling study of dual-earner couples, daily positive and negative mood covaried between partners, but only when the couples were physically together and when they reported their moods at about the same time (i.e., <10 min apart). Participants with children experienced weaker correlations of negative moods than those without children [46]. Affective coregulation has also been explored within the emotion transmission literature, which has found positive correlations in short-term emotional states not only within couples, but also between parents and children, with some evidence that the distribution of power in the family (for example, from parents to children) dictates the direction in which momentary emotion states are transferred from one family member to another [64].

We examined the coregulation of momentary mood and cortisol among the couples participating in the CELF study [65]. Over three weekdays, spouses reported on their moods and sampled saliva in the morning, before lunch, before leaving work, and at bedtime. We found positive connections between partners' negative moods and cortisol: if one spouse's negative mood or cortisol level was higher than usual (after adjusting for time), his spouse's negative mood and cortisol was likely to be higher as well. Wives who reported more marital dissatisfaction showed stronger daily linkages with husbands' cortisol. Similarly, both husbands and wives who were more maritally dissatisfied showed stronger associations between negative moods. Interestingly, momentary positive moods did not covary within couples. We also found, when we compared morning and evening samples with workday samples, that couple intercorrelations were driven by the sample collected when they were most likely to be at home together. These results suggest that couples do influence each other's momentary moods and stress levels, and that marital satisfaction may buffer spouses from each other's negative moods and stress states. More happily married couples may be better able to modulate each other's ups and downs, while dissatisfied couples might be more reactive to each other.

Spouse Behavior and Experiences at Work

In order for coregulation of affect and physiology to occur, there must be some way in which spouses are communicating their internal states. For example, disclosing news about a positive event is connected with increases in a partner's positive mood [10]. A spouse's supportive behavior is also linked to fluctuations in mood, but its effect may depend on the type of support and the context in which it is provided. A daily diary study of couples in which one member was preparing for the New York State Bar Examination found that the partner's provision of emotional support was most beneficial when it was not visible to the recipient. The examinee's depressed mood declined when the partner reported providing support but the recipient was not aware of it [66]. Daily diary studies of couples also point to the benefits of instrumental support from a spouse. In the Bar Exam sample, examinees reported less fatigue and more vigor when partners said that they provided more practical support [67]. In another study, husbands and wives described activities that they engaged in each day to work on important individual goals. After controlling for the effect of the previous day's affect, a partner's mood improved on days when his or her spouse got more involved in efforts to achieve the partner's personal goals [68].

A spouse's demanding or disapproving behavior also has a short-term emotional impact. Daily symptoms of anxiety reported by a sample of women with an anxiety disorder fluctuated each day according to the negative aspects of their partner's behavior, and the husbands' daily anxiety was related to the negative behaviors exhibited by their wives. In both cases, symptoms of anxiety increased on days when the spouse engaged in more negative behavior, such as being demanding or critical [69]. The findings were echoed in a sample of people with multiple sclerosis who experienced more end-of-day negative mood when their spouses made disapproving remarks or were avoidant or demanding. However, the association between negative spouse behaviors and mood was weakened on days of high emotional support [70].

The CELF study has yielded two sets of cross-sectional findings that concern linkages between spouse behavior and diurnal cortisol. First, we examined our naturalistic observations of social behavior in the family in conjunction with couples' diurnal cortisol slopes. The husbands with steeper cortisol slopes were married to women who were less actively socially engaged and who expressed less positive emotion on videos taken in the home [33]. Second, our examination of couples' at-home activities indicated that end-of-day cortisol was connected not only to an individual's own activities, but also to the activities of his or her spouse. Husbands showed lower levels of evening cortisol

and a greater afternoon-to-evening drop in cortisol if they spent more time in leisure and if their wives spent less time in leisure. On the other hand, wives showed lower evening cortisol and a greater afternoon-to-evening cortisol drop if they devoted less time to housework and if their husbands devoted more time to housework [35].

The studies discussed here indicate that a spouse's mood, behavior, and physiology at home influence his or her partner's well-being in the short-term. This pattern, combined with evidence presented earlier about the short-term impact that daily job stress can have on those same indicators of daily functioning, suggests that the residue of a spouse's work day could also affect a partner's daily well-being. At the cross-sectional level, wives' work fatigue and negative work mood are positively associated with their husbands' fatigue at home [71]. Those connections, often referred to as "crossover" effects, may be brought about by short-term processes that are repeated on a daily basis. For example, a study of Israeli dual-earner couples found that the experience of job stress predicted a short-term increase in the spouse's negative mood among couples reporting high marital quality, but not among those reporting low marital quality [11]. Researchers are also beginning to link daily job stress with a spouse's cortisol levels. Simply allocating more time to paid work is tied to greater daily cortisol secretion in one's spouse [34]. And Slatcher and colleagues [57] showed, in a sample of dual-earner parents, that husbands' momentary work worries were associated not only with short-term increases in their own cortisol levels but also in the cortisol levels of their wives.

A married person's everyday mood and physiology can be affected, at least in the short-term, by his or her spouse's mood, physiology, behavior, and experiences outside of the home. Research suggests that, when they are physically near each other, spouses' moods and physiology covary over short spans of time and that a spouse's experience of stress at work can have a daily impact on his or her partner's mood and physiology. The strength of these effects may depend on stable family characteristics, such as the presence of children and the quality of the marital relationship. In addition, daily spouse coregulation and crossover effects are probably mediated by day-to-day fluctuations in the spouse's behavior at home. For instance, research described earlier suggests that a spouse's demanding or disapproving behavior has a short-term negative emotional impact and that instrumental support is connected to short-term improvements in partner mood and to healthier diurnal cortisol slopes in partners.

Conclusion

The research discussed in this article shows how the ups and downs of daily family life—fluctuations in stressors,

demands, and social and emotional experiences—are reflected in short-term changes in affect and in the activity of biological stress-response systems, particularly the HPA axis. Families can sometimes function as havens where recovery takes place after a stressful day; at other times, stress spills over from the workplace into the home or is even exacerbated by a contentious home environment. Given evidence suggesting that day-to-day changes in a married adult's emotional and physiological state are influenced not only by a spouse's behavior, but even by the spouse's daily experiences at work, it is perhaps no surprise that mood and physiology covary within couples. We hope that more health researchers will move outside of the laboratory and study physiological processes as they unfold in everyday life. Naturalistic studies can tell us how common family events relate to day-to-day changes in cortisol secretion, as well as other biological processes, such as cardiovascular and immune system responses. Direct observations or repeated measures (e.g., daily diary) designs can be embedded within cross-sectional or longitudinal research to examine links between short-term and long-term health-related processes and the moderating roles of individual traits and family characteristics. Close examination of everyday life in the family means simultaneously observing different strands of the lives of multiple family members: their physiology, emotions, behavior, activities, and experiences. We argue that it is only by examining the interlacing of all these strands that researchers can ultimately learn how daily experiences at home connect family environments to the health and well-being of those who share those environments.

Acknowledgments The authors are grateful to Elinor Ochs and the other members of the UCLA Center on the Everyday Life of Families for creating a collaborative and supportive intellectual climate that advanced our work on this topic and to the Alfred P. Sloan Foundation for funding the center over many years. Shu-wen Wang's work on this paper was supported by a Dissertation Year Fellowship and the Dr. Ursula Mandel Scholarship, both awarded by the UCLA Graduate Division. Darby Saxbe's work on the paper was funded by Ruth L. Kirschstein Postdoctoral National Research Service Award from NICHD.

Conflict of Interest Statement The authors have no conflict of interest to disclose.

References

1. Robles, T.F. & Kiecolt-Glaser, J.K. The physiology of marriage: Pathways to health. *Physiology & Behavior*. 2003, 79: 409–416.
2. Logan, J., & Spitze, G. *Family ties: Enduring relations between parents and their grown children*. Philadelphia: Temple University Press, 1996.
3. Mancini, J. A., & Blieszner, R. Aging parents and adult children: Research themes in intergenerational relations. *Journal of Marriage and the Family*. 1989, 51(2): 275–290.

4. Zarit, S. H., & Eggebeen, D. J. Parent-child relationships in adulthood and later years. In M. H. Bornstein, ed. *Handbook of parenting*. 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates, 2002: 135–164.
5. Creasey, G., & Reese, M. Mothers' and fathers' perceptions of parenting hassles: Associations with psychological symptoms, nonparenting hassles, and child behavior problems. *Journal of Applied Developmental Psychology*. 1996, 17: 393–406.
6. Repetti, R. L., Robles, T. F., & Reynolds, B. M. Allostatic processes in the family. *Development and Psychopathology*. 2011, 23(3):921–938.
7. Ochs, E., Graesch, A., Mittmann, A., Bradbury, T., & Repetti, R. Video ethnography and ethnoarchaeological tracking. In M. Pitt-Catsouphes, E.E. Kossek, & S. Sweet, eds. *Handbook of work and family: Multi-disciplinary perspectives and approaches*. Mahwah, NJ: Erlbaum, 2006: 387–409.
8. Jones, F., & Fletcher, B. Taking work home: A study of daily fluctuations in work stressors, effects on moods and impacts on marital partners. *Journal of Occupational and Organizational Psychology*. 1996, 69(1): 89–106.
9. Whitton, S. W., Stanley, S. M., Markman, H. J., & Baucom, B. R. Women's weekly relationship functioning and depressive symptoms. *Personal Relationships*. 2008, 15: 533–550.
10. Hicks, A. M., & Diamond, L. M. How was your day? Couples' affect when telling and hearing daily events. *Personal Relationships*. 2008, 15: 205–228.
11. Lavee, Y., & Ben-Ari, A. Relationship of dyadic closeness with work-related stress: A daily diary study. *Journal of Marriage and Family*. 2007, 69: 1021–1035.
12. Thompson, A., & Bolger, N. Emotional transmission in couples under stress. *Journal of Marriage and the Family*. 1999, 61: 38–48.
13. Berg, C. A., Wiebe, D. J., Bloor, L., Butner, J., Bradstreet, C., Upchurch, R., Hayes, J., Stephenson, R., Nail, L., & Patton, G. Collaborative coping and daily mood in couples dealing with prostate cancer. *Psychology and Aging*. 2008, 23: 505–516.
14. Gleason, M. E. J., Iida, M., Bolger, N., & Shrout, P. E. Supportive equity in close relationships. *Personality and Social Psychology Bulletin*. 2003, 29: 1036–1045.
15. Savla, J., Almeida, D. M., Davey, A., Zarit, S. H. Daily routine assistance to older parents and everyday hassles. *Journals of Gerontology: Social Sciences*. 2008, 63: S154–S161.
16. Roper, S. O., & Yorgason, J. B. Older adults with diabetes and osteoarthritis and their spouses: Effects of activity limitations, marital happiness, and social contacts on partners' daily mood. *Family Relations*. 2009, 58(4): 460–474.
17. Koerner, S. S., Shirai, Y., & Kenyon, D. B. Sociocontextual circumstances in daily stress reactivity among caregivers for elder relatives. *Journals of Gerontology B: Psychological Sciences*. 2010, 65(5): 561–572.
18. Saxbe, D. E. & Repetti, R. L. No place like home: Home tours correlate with daily patterns of mood and cortisol. *Personality and Social Psychology Bulletin*. 2010, 36(1): 71–81.
19. McEwen, B. S. Protective and damaging effects of stress mediators. *New England Journal of Medicine*. 1998, 338: 171–179.
20. Miller, G. E., Chen, E., & Zhou, E. S. If it goes up, must it come down?: Chronic stress and the hypothalamic-pituitary-adrenocortical axis in humans. *Psychological Bulletin*. 2007, 133(1): 25–45.
21. Bower, J. E., Ganz, P. A., & Aziz, N. Altered cortisol response to psychological stress in breast cancer survivors with persistent fatigue. *Psychosomatic Medicine*. 2005, 67: 277–280.
22. Lindeberg, S. I., Eek, F., Lindbladh, E., Ostergren, P. O., Hansen, A. M., & Karlson, B. Exhaustion measured by the SF-36 vitality scale is associated with a flattened diurnal cortisol profile. *Psychoneuroendocrinology*. 2008, 33: 471–477.
23. Lauc, G., Zvonar, K., Vuksic-Mihaljevic, Z., & Flögel, M. Post-awakening changes in salivary cortisol in veterans with and without PTSD. *Stress and Health*. 2004, 20(2): 99–102.
24. Sephton, S. E., Sapolsky, R. M., Kraemer, H. C. and Spiegel, D. Diurnal cortisol rhythm as a predictor of breast cancer survival. *Journal of National Cancer Institute*. 2000, 92: 994–1000.
25. Matthews, K., Schwartz, J., Cohen, S., & Seeman, T. Diurnal cortisol decline is related to coronary calcification: CARDIA Study. *Psychosomatic Medicine*. 2006, 68: 657–661.
26. Daniel, M., Moore, D. S., Decker, S., Belton, L., DeVellis, B., Doolen, A., & Campbell, M. K. Associations among education, cortisol rhythm, and BMI in blue-collar women. *Obesity*. 2006, 14(2): 327–35.
27. Sapolsky, R. M., Romero, L. M., & Munck, A. U. How do glucocorticoids influence stress responses? Integrating permissive, suppressive, stimulatory, and preparative actions. *Endocrine Reviews*. 2000, 21(1): 55–89.
28. Ditzen, B., Hoppmann, C., & Klumb, P. Positive couple interactions and daily cortisol: On the stress-protecting role of intimacy. *Psychosomatic Medicine*. 2008, 70: 883–889.
29. Adam, E. K., & Gunnar, M. R. Relationship functioning and home and work demands predict individual differences in diurnal cortisol patterns in women. *Psychoneuroendocrinology*. 2001, 26: 189–208.
30. Barnett, R. C. Steptoe, A. Gareis, K. C. Marital-role quality and stress-related psychobiological indicators. *Annals of Behavioral Medicine*. 2005, 30: 36–43.
31. Vedhara, K., Tuinstra, J., Miles, J. N. V., Sanderman, R. B., & Ranchor, A. V. Psychosocial factors associated with indices of cortisol production in women with breast cancer and controls. *Psychoneuroendocrinology*. 2006, 31: 299–311.
32. Saxbe, D. E., Repetti, R. L., & Nishina, A. Marital satisfaction, recovery from work, and diurnal cortisol among men and women. *Health Psychology*. 2008, 27(1): 15–25.
33. Wang, S., Repetti, R. L., & Campos, B. Links between diurnal cortisol and naturalistic social behavior in the family. Manuscript submitted for publication, 2011.
34. Klumb, P. K., Hoppmann, C., & Staats, M. Work hours affect spouse's cortisol secretion—For better and for worse. *Psychosomatic Medicine*. 2006, 68: 742–746.
35. Saxbe, D.E., Repetti, R.L., & Graesch, A.P. Time spent in housework and leisure: Links with parents' physiological recovery from work. *Journal of Family Psychology*. 2011, 25: 271–281.
36. Luecken, L., Suarez, E., Kuhn, C., Barefoot, J., Blumenthal, J., Siegler, I., and Williams, R. Stress in employed women: Impact of marital status and children at home on neurohormone output and home strain. *Psychosomatic Medicine*. 1997, 59: 352–359.
37. Frankenhaeuser, M., Lundberg, U., Fredrikson, M., Melin, B., Tuomisto, M., & Myrsten, A. Stress on and off the job as related to sex and occupational status in white-collar workers. *Journal of Organizational Behavior*. 1989, 10: 321–346.
38. Lundberg, U., & Frankenhaeuser, M. Stress and workload of men and women in high-ranking positions. *Journal of Occupational Health Psychology*. 1999, 4: 142–151.
39. Schnall, P. L., Schwartz, J. E., Landsbergis, P. A., Warren, K., & Pickering, T. G. A longitudinal study of job strain and ambulatory blood pressure: Results from a three year follow-up. *Psychosomatic Medicine*. 1998, 60: 697–706.
40. Chandola, T., Brunner, E., & Marmot, M. Chronic stress at work and the metabolic syndrome: Prospective study. *British Medical Journal*. 2006, 332: 521–524.
41. Hotopf, M. H., & Wessely, S. Stress in the workplace: Unfinished business. *Journal of Psychosomatic Research*. 1997, 43: 1–6.
42. Tennant, C. Work-related stress and depressive disorders. *Journal of Psychosomatic Research*. 2001, 51, 697–704.

43. Goodman, W. B., Crouter, A. C., & The Family Life Project Key Investigators. Longitudinal associations between maternal work stress, negative work-family spillover, and depressive symptoms. *Family Relations*. 2009, 58: 245–258.
44. Albright, C. L., Winkleby, M.A., Ragland, D.R., Fisher, J., & Syme, S. L. Job strain and prevalence of hypertension in a biracial population of urban bus drivers. *American Journal of Public Health*. 1992, 82: 984–89.
45. Judge, T. A., & Ilies, R. Affect and job satisfaction: A study of their relationship at work and at home. *Journal of Applied Psychology*. 2004, 89(4): 661–673.
46. Song, Z., Foo, M-D., & Uy, M. A. Mood spillover and crossover among dual-earner couples: A cell phone event sampling study. *Journal of Applied Psychology*. 2008, 93(2): 443–452.
47. Bolger, N., DeLongis, A., Kessler, R. C., & Wethington, E. The contagion of stress across multiple roles. *Journal of Marriage and Family*. 1989, 51: 175–183.
48. Story, L. B., & Repetti, R. Daily occupational stressors and marital behavior. *Journal of Family Psychology*. 2006, 20: 690–700.
49. Schulz, M. S., Cowan, P. A., Cowan, C. P., & Brennan, R. T. Coming home upset: Gender, marital satisfaction and the daily spillover of workday experience into couple interactions. *Journal of Family Psychology*. 2004, 18: 250–263.
50. Repetti, R. L. Short-term and long-term processes linking job stressors to father-child interaction. *Social Development*. 1994, 3: 1–15.
51. Repetti, R. L., & Wood, J. Effects of daily stress at work on mothers' interactions with preschoolers. *Journal of Family Psychology*. 1997, 11: 90–108.
52. Repetti, R. & Saxbe, D. The effects of job stress on the family: One size does not fit all. In R. Crane and E. J. Hill, eds. *Handbook of Families & Work: Interdisciplinary Perspectives*. Lanham, MD: University Press of America, 2009: 62–78.
53. Wang, S., Repetti, R. L., & Campos, B. Job stress and family social behavior: The moderating role of neuroticism. *Journal of Occupational Health Psychology*. (2011).
54. Repetti, R. L. Effects of daily workload on subsequent behavior during marital interaction: The roles of social withdrawal and spouse support. *Journal of Personality and Social Psychology*. 1989, 57(4): 651–659.
55. Repetti, R. L. Social withdrawal as a short-term coping response to daily stressors. In H. S. Friedman, ed. *Hostility, coping, and health*. Washington DC: American Psychological Association, 1992: 151–165.
56. Steptoe, A., Cropley, M., Griffith, J., & Kirschbaum, C. Job strain and anger expression predict early morning elevations in salivary cortisol. *Psychosomatic Medicine*. 2000, 62: 286–292.
57. Slatcher, R. B., Robles, T. F., Repetti, R. L., & Fellows, M. D. Momentary work worries, marital disclosure, and salivary cortisol among parents of young children. *Psychosomatic Medicine*. 2010, 72: 887–896.
58. McClintock, M. Menstrual synchrony and suppression. *Nature*. 1971, 229: 244–5.
59. Sbarra, D.A., & Hazan, C. Coregulation, dysregulation, self-regulation: An integrative analysis and empirical agenda for understanding adult attachment, separation, loss, and recovery. *Personality and Social Psychology Review*. 2008, 12: 141–167.
60. Levenson, R.W., Gottman, J.M. Marital interaction: Physiological linkage and affective exchange. *Journal of Personality and Social Psychology*. 1983, 45(3): 587–597.
61. Gottman, J. M., Coan, J., Carrere, S., Swanson, C. Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage & the Family*. 1998, 60(1): 5–22.
62. Schoebi, D. The coregulation of anger and sadness in marital relationships. *Journal of Family Psychology*. 2008, 22: 595–604.
63. Butner, J., Diamond, L.M, Hicks, A.M. Attachment style and two forms of affect coregulation between romantic partners. *Personal Relationships*. 2007, 14: 431–455
64. Larson, R., & Almeida, D. Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family*. 1999, 61(1): 5–20.
65. Saxbe, D. & Repetti, R.L. For better or worse? Coregulation of couples' cortisol levels and mood states. *Journal of Personality and Social Psychology*. 2010, 98(1): 92–103.
66. Bolger, N., Zuckerman, A., & Kessler, R. Invisible support and adjustment to stress. *Journal of Personality and Social Psychology*. 2000, 79(6): 953–961.
67. Shrout, P. E., Herman, C. & Bolger, N. The costs and benefits of practical and emotional support on adjustment: A daily diary study of couples experiencing acute stress. *Personal Relationships*. 2006, 13(1): 115–134.
68. Meegan, S. P., & Goedereis, E. A. Life task appraisals, spouse involvement in strategies, and daily affect among short-and long-term married couples. *Journal of Family Psychology*. 2006, 20(2): 319–327.
69. Zaider, T.I., Heimberg, R.G., & Iida, M. Anxiety disorders and intimate relationships: A study of daily processes in couples. *Journal of Abnormal Psychology*. 2010, 119: 163–173.
70. Kleiboer, A.M., Kuijter, R.G., Hox, J.J., Jongen, P.J.H., Frequin, S. T.F.M., & Bensing, J.M. Daily negative interactions and mood among patients and partners dealing with multiple sclerosis (MS): The moderating effects of emotional support. *Social Science & Medicine*. 2007, 64: 389–400.
71. Chan, C. J., & Margolin, G. The relationship between dual-earner couples' daily work mood and home affect. *Journal of Social and Personal Relations*. 1994, 11: 573–586.