

Emotions in Social Relationships and Their Implications for Health and Disease: Introduction to the Special Issue of *Psychosomatic Medicine*

Bert N. Uchino, PhD, and Naomi I. Eisenberger, PhD

ABSTRACT

Social relationships and emotions are important to health and disease, but research in this area has largely progressed along parallel and distinct historical paths. These areas are critically linked because relationships are among the most powerful elicitors of health-relevant emotions and emotions can in turn influence relationships for better or worse. Conceptually, relationships and emotions can have mediational, reciprocal, and interactive influences on health outcomes, associations that seem dependent on the broader sociocultural context. The articles in this issue of *Psychosomatic Medicine* are based on a joint meeting of the American Psychosomatic Society and the Society for Affective Science titled “Emotions in social relationships: implications for health and disease.” Recent research and conceptual models that fall at the interface of relationships, emotions, and health are highlighted in this special issue. Future work that capitalizes on these links will be critical if this area is to fulfill its potential in terms of new scientific insights and intervention opportunities.

Key words: relationships, emotions, health.

INTRODUCTION

The study of psychological and social risk factors for disease has a long history (1). One of the earliest recorded cases occurred in the third-century BC when Antiochus, son of a general for Alexander the Great, fell in love with his new stepmother (2). He was determined not to show his love and fell ill. The skilled and observant Greek physician Eristratos monitored Antiochus in the presence of other people and discovered that whenever his father's new bride came to visit, Antiochus' heart rate would become irregular and he would start sweating. The diagnosis of “love sickness” was made. Upon hearing this, the general separated from his new bride and his son soon recovered. What is particularly noteworthy is that this case involved an interaction of both social (step-mother, father) and emotional (love, guilt) processes that contributed to Antiochus' physical malady.

Since this intriguing historical case, these two key areas of psychosomatic medicine—namely, social relationships and emotions—have evolved along their own parallel historical paths (3). Past research on social relationships has focused heavily on documenting the link between social processes such as social support to disease morbidity and mortality (4,5). Meta-analytic evidence suggests that relationship processes are one of the strongest predictors of health, an association that is comparable with well-established risk factors such as smoking and physical activity (4,6). Although additional epidemiological work continues to emerge from this area,

contemporary research is focused on the antecedent processes and mediators of such links that can inform theory and intervention approaches (5,7–9). These include the contributions of the early family environment as well as cognitive, affective, behavioral, and biological mediators (5,7,10–12). Of these, emotional or affective mechanisms such as negative and positive affect have frequently been proposed as psychological mechanisms but rarely formally tested (13).

A largely separate but long-standing area of research has focused on affective predictors of morbidity and mortality. The dominant approach has been to examine separate indices of negative affect such as anger, depression, or anxiety and its links to health (14–16). This has been an attempt to separate out “flavors” of negative affect (as well as more specific emotions) to examine their unique or overlapping associations with disease (17,18). For instance, there is some evidence for both unique contributions of depression and anxiety to health as well as the utility of a composite negative affect score, although more work is needed (18,19). Emerging work is also highlighting the importance of positive affective processes such as happiness (20–22), as well as increasingly complex biological pathways linking affect to disease (23–26).

Although there has certainly been past work at the interface of these areas, what has been missing is a systematic emphasis that underscores how critical each area is to the research and intervention agenda of the other (3,27,28). Relationships are one of the most important and powerful sources of emotion (e.g., love and anger) (3). In addition, affective processes can influence relationships for better or worse (27,29). As the field starts to think more programmatically about integration, prior work can provide us

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From the Department of Psychology and Health Psychology Program, University of Utah (Uchino), Salt Lake City, Utah; and Department of Psychology, University of California, Los Angeles (Eisenberger), Los Angeles, California.

The authors are Guest Editors of the *Psychosomatic Medicine* special issue: Emotions in Social Relationships and Their Implications for Health and Disease. Address correspondence to Bert N. Uchino, PhD, Department of Psychology, University of Utah, 380 S. 1530 E. Rm 502, Salt Lake City, UT 84112. E-mail: bert.uchino@psych.utah.edu

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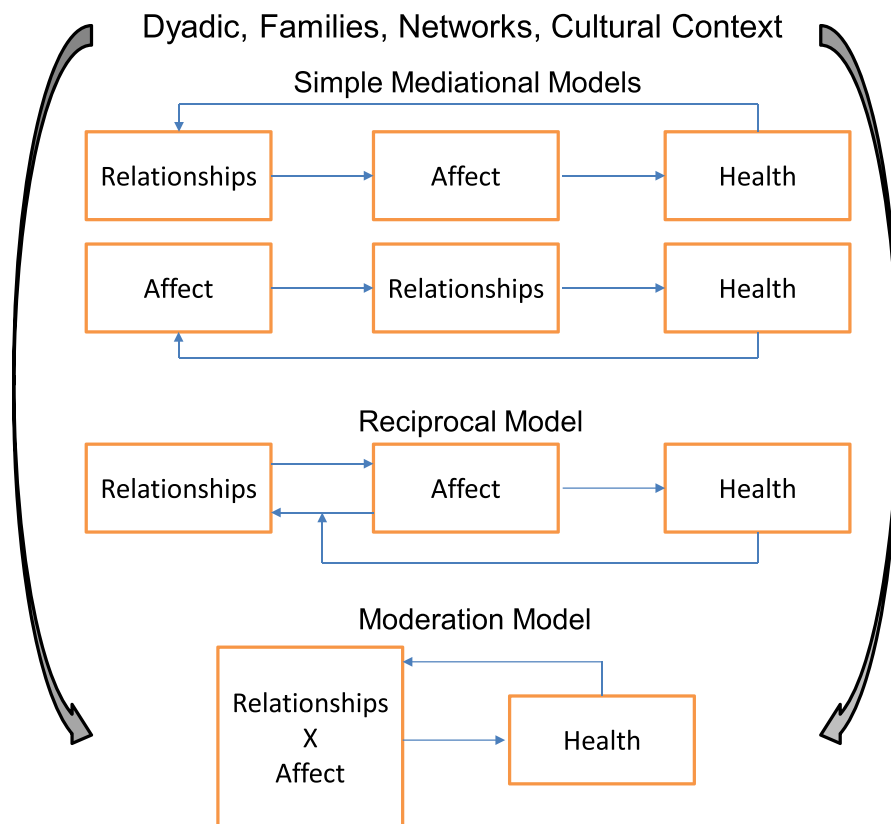


FIGURE 1. Mediation, reciprocal, and moderational models linking relationships and affect to health. Color image is available only in the online version (www.psychosomaticmedicine.org).

with several broad and testable conceptual models of how relationships and affect might jointly influence health.

As shown in Figure 1, there are simple mediational models in which either affect or relationships mediate the influence of each other on health. For instance, relationship processes such as social evaluation or isolation can trigger self-conscious emotions, which may be particularly health-relevant (30,31). Likewise, depression may contribute to poor interactions (32), which in turn exacerbate health problems (33). More generally, the positive and negative affective qualities of the relationship or interpersonal interaction (e.g., supportive, aversive, or ambivalent) can determine if social relationships have salubrious or detrimental influences on health (34). A more complex model might test bidirectional influences between relationships and affect on health over time. As an example, positive affect and social connections seem to have reciprocal influences on physiology that place people on “upward spirals” that benefit their health (27,35). A moderational model is also salient because relationships processes such as social support may buffer the negative influence of depression on health (36). Depicted in each of these models are direct effects of health on relationships/affect as well. This is an important but understudied process because chronic conditions can lead to changes in affective (e.g., depression) and relationship (e.g., mobilization/erosion of support) processes (37–40).

The broader dyadic, family, and cultural contexts are also represented in Figure 1. This includes both specific relationships (e.g., romantic partner, and children) and the larger social context in which such relationships are embedded (e.g., families and neighborhoods). These processes are important to model explicitly

because most work in both areas focuses on one person’s reports of his/her relationships/affect and his/her own health outcomes. Modeling the social context highlights the interdependence between individuals in relationships and would require appropriate data collection (e.g., couples) and statistical approaches such as actor-partner models (41). Existing studies suggest that the value in this approach as a partner’s view of his/her relationships and a partner’s ratings of his/her spouse’s negative affect uniquely predicted his/her cardiovascular risk (42,43). Culture can also influence relationships processes and the experience of emotions (44,45). Importantly, there is evidence for cultural differences in the link between social and affective processes on health (46–49). For instance, one study found that expressing anger was detrimental to Americans but beneficial for Japanese (as a reflection of social status) on a composite measure of biological risk (e.g., inflammation and lipid profiles) (47). Collectively, such studies caution us against relying exclusively on one’s own self-reports of social/affective processes in modeling links to health.

Finally, we should note that, for progress to be made at the interface between relationships and affect, we need to be more specific with the use of our terms and their operationalizations. Such an approach will aid in the development of testable theories, which can inform more specific intervention approaches. For instance, when studying relationships, do we examine perceptions of relationships processes or actual relationship interactions? The two are not the same and have very different theoretical and intervention implications (e.g., perceived versus received support (5,50)). The same arguments can be made for affective processes. Are researchers taking a broad approach (e.g.,

composite negative affect) or examining specific emotional states (e.g., anger and pride) in modeling links to health (17,18)? Are researchers focusing on self-report assessments or physiological indices? At this point, each literature is sufficiently developed with existing models, which can guide the specific operationalization and theoretical implications of any integrative question.

Given the current status of the literature, this special issue attempts to foster greater integration between relationship science and affective science by capitalizing on a highly successful joint meeting of the American Psychosomatic Society and the Society for Affective Science titled “Emotions in social relationships: implications for health and disease” (October 20–21, 2017; Berkeley, CA). This international meeting brought together researchers and clinicians from around the world to discuss the status of integration among these areas, novel approaches, and future research directions that would benefit both theory and application. After the meeting, invited presenters were asked to contribute to this special issue, which centered around the following areas:

1. How affective processes in the context of relationships influence health-relevant biological (e.g., inflammation and cellular aging) or disease (e.g., morbidity and mortality) outcomes
2. Life-span work on the development of relationships and emotions in the early family environment, emerging adulthood, mid-life, and/or older adulthood and its links to health and disease
3. Mechanistic pathways linking relationships and emotions to health (e.g., neural, cognitive, genetic, and health behaviors)

In a review for the special issue, Smith and Weihs (51) argue strongly on both conceptual and statistical grounds for the importance of integrating research on relationships and emotions. They cover evidence on how personal relationships and emotions have interconnected influences on health. They also review conceptual models on positive and negative influences between the social context and emotions/emotion regulation, as well as how these may codevelop over the life-span. They end with an excellent discussion of future issues to guide emerging research including biological modeling, mechanisms, contexts, diversity/disparities, and methodological and intervention challenges/opportunities.

One of the articles in this special issue also traces the historical roots of psychosomatic research at the interface of relationships, affect, and health. In this review, Herrmann-Lingen and von Boetticher (52) discuss the pioneering work of seminal figures such as Helen Dunbar, Walter Cannon, and George Engels, as well as important events that sparked interest in the interface of these areas. They also reviewed the journal (*Psychosomatic Medicine*) for research trends in these areas from 1939 to 2017. They note that, although the potential of such work was acknowledged as early as the 1930s, such views played only a lesser role in published work, as there were relatively few articles that addressed both a social and emotion components over those years. They conclude with recommendations for likely fruitful interdisciplinary areas of inquiry such as modeling the neurobiology of relationships and affect, and its links to health.

Most of the articles in this special issue are reviews of areas in which integration between relationships and emotions is taking place. Kiecolt-Glaser et al. (53) present a novel framework for examining the links between emotions, relationships, and health by focusing on the gut microbiome. They focus on recent work in the marital context on how couples share exposure to stressors

and emotions that may directly impact the microbiome and subsequent health. It is argued that both the diversity of the microbiome and gut leakiness may be key mechanisms linking marriage, stress, and depression to age-related health outcomes. Although they note that research with humans is sparse, their model is a strong example of an integrative approach that capitalizes on advances in both areas to drive future research.

The article by Leschak and Eisenberger (54) reviews the implications of an evolutionary approach to these areas. They note the interesting and novel possibility that specific aspects of relationships (e.g., social adversity/loneliness and social support/integration) may be uniquely linked to different aspects of immune function owing to its evolutionary significance (e.g., adversity linked with increased inflammation due to the potential for wounding and social support linked more to increased antiviral responses given increased exposure to pathogens). One noteworthy aspect of this review is that they explicitly model reciprocal processes, given that alterations in immune processes can also impact social/affective processes. Although more work is needed in human participants, this generative model gives rise to novel predictions for future work to pursue.

Prior research has demonstrated a link between relationships, general affective processes, and health. In an intriguing review, Levenson (55) argues for the importance of examining specific emotions based on his influential work on autonomic nervous system specificity and how specific emotions might be linked to particular diseases (e.g., anger with cardiovascular symptoms). Levenson also examines the important and understudied questions regarding reciprocal associations as he details recent work on how neurodegenerative disorders influence both relationships and emotions. He examines the degree of specificity of these associations based on the brain areas that might be involved (e.g., frontotemporal dementia and social processes/emotions). Finally, this review examines how caregiving for a patient with neurodegenerative disorders results in emotions that can influence health at a dyadic level (e.g., social/affective processes in patients with Alzheimer’s disease and how they impact caregiver health).

For years, psychosomatic researchers have puzzled over the links between bereavement and negative health outcomes. In another review piece, O’Connor (56) details the negative health consequences of grief from a biopsychosocial perspective. O’Connor reviews evidence showing that bereavement is associated with increases in all-cause mortality and suggests that one possible mechanism may be through alterations in cardiovascular and immune parameters, which reliably follow bereavement as well. O’Connor also reviews work exploring the neural underpinnings of the process of grief, as well as complicated grief, in which the painful emotions of loss do not improve over time. She concludes by providing some possible future directions for the field.

A few articles in this special issue contain empirical studies at the interface of relationships, emotions, and health. Gordon et al. (57) present evidence from two studies on the link between relationships, affect, and health in the context of sleep. Such links are important given that poor sleep is tied to adverse mental and physical health outcomes (58,59). In two studies, they investigate direct and potential reciprocal links between social-affective processes and sleep. They found that social rejection is linked to shorter sleep, with some evidence that the association might be due to increased physiological reactivity after social rejection. They also provide preliminary evidence that poor sleepers show heightened affective reactivity to social rejection. This article provides an excellent example of how one can test

the different models depicted in Figure 1 using both laboratory and ambulatory assessments.

One article in the special issue provides a unique, in-depth review of a new statistical software package specifically designed to examine interpersonal emotional processes in close relationships. Butler and Barnard (60) introduce “rties,” which uses dynamic models to test whether various patterns of emotional responses between two individuals (e.g., synchrony) can predict various kinds of health outcomes. To highlight the functionality of their software program, they examine whether emotional dynamics in romantic couples can predict shared unhealthy behaviors. They found that a particular model—the Couple-Oscillator model, in which couples become progressively more dysregulated together—accounted for 15% of the variance in shared unhealthy behavior. These data provide a useful example of a novel software package that could go far to better help us analyze the unique features of shared emotional processes within relationships that could contribute to health outcomes.

Finally, another important type of emotional experience within relationships occurs at the intergroup level. Specifically, Lewis et al. (61) examined the effects of expectations and experiences of racism on carotid atherosclerosis in a group of premenopausal African American women. Although prior work has shown links between experienced racism and health outcomes, few studies have examined links between expectations of racism and health. Interestingly, Lewis and colleagues find a dose-response relationship between expectations of racism and carotid intima-media thickness, a marker of cardiovascular risk that is independent of experiences of racism. In fact, although experiences of racism were related to depression, experiences of racism were not related to cardiovascular outcomes. These findings show that regardless of whether racism is actually experienced by an individual, the expectation of racism can increase cardiovascular risk in African-Americans.

CONCLUSIONS

This special issue is a call for more systematic integration between relationship science and affective science. Both areas are in need of each other’s conceptual models and methods if we are to successfully understand and intervene on the complex links between relationships, emotions, and health. The articles in this special issue start to delineate crucial areas of integration and generative perspectives. This work is critical in guiding and inspiring the next wave of research that will help us understand the nature of such links and improve both the quality and longevity of people’s lives.

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