

Close Relationship Processes and Health:
Implications of Attachment Theory for Health and Disease

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Abstract

Objectives: Health psychology has contributed significantly to understanding the link between psychological factors and health and well-being, but it has not often incorporated advances in relationship science into hypothesis generation and study design. We present one example of a theoretical model following from a major relationship theory (attachment theory) that integrates relationship constructs and processes with biopsychosocial processes and health outcomes.

Methods: We briefly describe attachment theory and present a general framework linking it to dyadic relationship processes (relationship behaviors, mediators and outcomes) and health processes (physiology, affective states, health behavior and health outcomes). We discuss the utility of the model for research in several health domains (e.g., self-regulation of health behavior, pain, chronic disease) and its implications for interventions and future research.

Results: This framework revealed important gaps in knowledge about relationships and health. Future work in this area will benefit from taking into account individual differences in attachment, adopting a more explicit dyadic approach, examining more integrated models that test for mediating processes, and incorporating a broader range of relationship constructs that have implications for health.

Conclusions: A theoretical framework for studying health that is based in relationship science can accelerate progress by generating new research directions designed to pinpoint the mechanisms through which close relationships promote or undermine health. Furthermore, this knowledge can be applied to develop more effective interventions to help individuals and their relationship partners with health-related challenges.

Keywords: close relationships, attachment style, social support, health, biopsychosocial processes, health behavior, relationship quality

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Supportive relationships are health protective (e.g., Berkman, Glass, Brissette, & Seeman, 2000; Cohen, 2004; Uchino, 2009). People who lack social ties or social integration experience higher mortality rates especially from cardiovascular disease but also from other diseases such as cancer (see Holt-Lunstad, Smith, & Layton, 2010). Although the connections between relationships and health are well-established, less is known about the interpersonal processes through which relationships influence health outcomes, despite a call for this type of research more than 20 years ago (e.g., House, Landis, & Umberson, 1988). Progress has been made on the biological mediators (e.g. Miller, Chen, & Cole, 2009), but cutting edge research in relationship science typically has not been integrated into health psychology. In this article, we draw on recent theory and research from the study of adult attachment theory in relationship science to develop an integrative framework for investigating how relationship constructs and processes influence health-related outcomes.

The field of relationship science has expanded considerably in the past three decades, and it has yielded a number of rich theories of close relationships that have generated multiple innovative lines of research (for reviews, see Clark & Lemay, 2010 and Reis, in press). During approximately the same time period, health psychology also emerged as a distinct and rapidly expanding and developing subfield of psychology. Although many theories and empirical findings from relationship science are relevant for understanding a range of health-related issues, relationship science and health psychology have often progressed in parallel or independently with a few exceptions (e.g., Belcher et al., 2011; Kim, Carver, Deci, & Kasser, 2008; Manne et al., 2004a). Many specific ideas drawn from the social and personality literature on close

relationships appear in the health literature, but overall, health psychology generally has not incorporated relationship science theories to generate hypotheses or integrated relationship science paradigms into research design and methodology. The goals of this article are threefold: To present one example of a theoretical model that integrates key relationship constructs and processes with biopsychosocial processes and health outcomes, to illustrate how the model can be applied to several specific health areas, and to offer recommendations to guide future relationship research designed to understand and promote health and well-being.

Three major theoretical frameworks have guided most contemporary social and personality research on close personal relationships: attachment theory, interdependence theory, and theories based in evolutionary approaches (Reis, in press). In addition, relationships research has been informed by a variety of more specific theories such as the communal-exchange framework (Clark & Mills, 1979) and the intimacy process model (Reis & Shaver, 1988), and more recent approaches include the self-expansion model (Aron & Aron, 2001), the risk regulation model (Murray, Holmes, & Collins, 2006), and relationship goal approaches (Canevello & Crocker, 2011; Gable & Impett, in press). In this article, we selectively focus on one major theoretical perspective, *adult attachment theory*, because it has driven a disproportionately large segment of research on relationship processes and outcomes over the past 25 years, has been shown to have wide explanatory power, and has clear relevance for health-related behavior and outcomes (see Mikulincer & Shaver, 2007).

In the following sections, we first provide a brief overview of adult attachment theory. Second, we present a theoretical model incorporating components of attachment theory to specify how key relationship variables may predict health behavior and outcomes and highlight how this attachment-based model can generate novel lines of research to understand and promote

health and well-being. Third, we discuss specific applications of the model to investigate connections between relationship processes and health (e.g., health behavior, coping with pain) in adults. Fourth, we offer examples of how the model might inform interventions. Finally, we provide a roadmap for future research. We focus on connections between *close* relationships and health and, because of space constraints as well as the centrality of close connections to our lives, we do not discuss other types of potentially relevant relationships such as broader social networks, buddy systems, or social connectivity (e.g., see Kawachi & Subramanian, 2008 and Smith & Christakis, 2008, all worthy of relationship science and health psychology integration as well).

Attachment Theory

Although a detailed overview of attachment theory is beyond the scope of this article (for reviews, see Collins & Feeney, 2010 and Mikulincer & Shaver, 2007), here we describe briefly the core principles, and in subsequent sections, we elaborate on their relevance for health research. *Attachment theory* (e.g., Bowlby, 1969, 1973; Mikulincer & Shaver, 2007) focuses on understanding the functions of a close bond with an attachment figure such as a parent or spouse. Although the original theory concerned infant-caregiver bonds, it has been elaborated and extended to other attachment relationships over the lifespan especially romantic partners (see Mikulincer & Shaver, 2007). Our emphasis is on attachment theory as applied to adult relationships, as they have received the most attention in social and personality research; applications in childhood are health relevant but not included here.

The *attachment behavioral system* is conceptualized as a biologically-based, innate system that protects individuals by keeping them close to caregivers in the face of danger (Bowlby, 1969). It serves the evolutionary goal of helping infants survive and enables

individuals of *any age* who feel threatened to reestablish emotional security through contact and comfort from an attachment figure. Threats to an attachment bond, such as illness, pain, or stressors such as separation, will activate attachment behavior, for example, seeking proximity to the caregiver, aimed to reestablish and maintain the bond (see Mikulincer & Shaver, 2007).

The *attachment system* triggers behaviors designed to protect individuals from physical harm but also to help regulate affect (e.g., distress) (Bowlby, 1973; see Mikulincer & Shaver, 2007). This regulatory function is evident when frightened infants seek proximity to their caregiver, and when caregivers respond by providing comfort and reassurance, thereby helping infants to regulate distress and to regain a feeling of security. Paralleling the process observed in children, adults who are distressed may seek out an attachment figure (often their spouse) in an attempt to restore emotional well-being, and adult partners often respond by providing care through reassurance, comfort, and/or tangible support (Collins & Feeney, 2010). These attachment-related relationship dynamics also require the ability to *regulate behavior* in relation to the caregiver (e.g., seeking proximity) and deciding when to approach or disengage from a goal (see Mikulincer & Shaver, 2007). In addition, the attachment behavioral system works together with other postulated behavioral systems (e.g., caregiving, sexual behavior, exploration; see Mikulincer & Shaver, 2007). For example, the *caregiving system* generally leads individuals to be attuned to their relationship partner's distress signals, and it typically triggers behaviors that will protect, support, and promote the well-being of the relationship partner. In contrast to normative parent-child relationships, in adult relationships, both partners may rely on each other to fulfill attachment needs and both partners also may act as caregivers; thus, attachment and caregiving processes are highly interrelated in adults (see Collins & Feeney, 2010).

According to attachment theory, individual differences arise in how the attachment system operates as a result of different experiences in recurring interactions with attachment figures. These individual differences are reflected in what are termed *working models* that consist of expectations about the worthiness of the self in relation to significant others, and the availability and responsiveness of attachment figures (Bowlby, 1973). Working models show some continuity from childhood to adulthood, although they may change as a function of experience and across different relationships (Mikulincer & Shaver, 2007; Pietromonaco & Barrett, 2000). In adults, individual differences in *attachment style* are typically captured by two dimensions: *attachment anxiety and avoidance* (see Mikulincer & Shaver, 2007). *Anxious attachment* refers to a pattern of hyperactivation in the face of threat, including heightened distress and persistently seeking proximity and reassurance from others. *Attachment avoidance* refers to a pattern of deactivation in response to threat, including minimizing distress, turning attention away from the threat, and being overly self-reliant. *Attachment security*, a key concept in the theory, refers to the combination of *low anxiety and low avoidance* reflecting feeling comfortable with closeness and trusting that a partner will be available and responsive when needed. These attachment styles have been shown to predict whether and how people seek support from close others as well as the ability to provide comfort and reassurance when their partner needs it (i.e., caregiving; Collins & Feeney, 2010) and many other aspects of relationship functioning (see Mikulincer & Shaver, 2007). In fact, the explanatory power of these individual differences has been remarkably broad and consistent.

We decided to focus on attachment theory as an exemplar of relationship science theory because of its potential to generate a multitude of interesting hypotheses relevant to the connection between relationships and health behavior and outcomes. Specifically, it offers

insights into both normative processes of careseeking and caregiving that are highly significant in the context of health threats and individual differences in attachment style that can shape individuals' health behaviors and outcomes across the life span.

Theoretical Framework for Investigating Relationship Processes and Health

Figure 1 presents a theoretical framework for representing existing research and for guiding future work. It incorporates both relationship processes and health processes. We drew from the major elements of attachment theory regarding how mental representations of relationships may contribute to relationship processes especially careseeking and caregiving, and we illustrate the consequences of relationship processes for physiological responses, affective states, health behavior, and further, for health outcomes. First and foremost, this theoretical schema is a general one from which researchers can derive variations and specific more detailed models, and importantly, hypotheses and research questions. Second, it involves attachment style as the major originating construct, although the general approach could be altered to model other relationship constructs (e.g., relationship goals; see Canevello & Crocker, 2011 and Gable & Impett, in press). Third, it is fundamentally a dyadic model, although similar approaches for groups such as families or social networks are also possible to link relationship science to health psychology. Fourth, it encompasses a dynamic set of processes that are unfolding over time between relationship partners as well as their health-related events. Fifth, it may be applied at various stages of the lifespan but here we consider it primarily within adult partner dyads.

Figure 1 illustrates a prototypical dyadic relationship in which relationship orientations (attachment style) can shape dyadic processes (see Paths a/b). Dyadic processes include *relationship behaviors* (e.g., support-seeking, caregiving) and *relationship mediators and outcomes* (e.g., partner responsiveness, relationship satisfaction, commitment), which can

mutually influence each other (Paths c/d). *Partner responsiveness* is a key concept in relationship science and refers individuals' perceptions that their partners are accepting, understanding, and caring (Reis & Shaver, 1988). Note that both positive and negative dyadic processes (e.g., caregiving, social negativity) are included because they have distinct effects. For example, social negativity (conflict, insensitivity) predicts adverse health-related outcomes above and beyond the absence of support (Brooks & Dunkel Schetter, 2011). Each partner's dyadic processes can influence and are influenced by physiological responses, affect, and health behavior (Paths f/g) and health and disease outcomes (Paths k/l).

The framework also includes examples of pathways through which each partner can influence the other (Paths e, h-j). For simplicity, only some partner effects are depicted but others are possible (e.g., Partner A's attachment style may affect Partner B's relationship mediators and outcomes and vice versa; Partner B's health and disease outcomes may affect Partner A's physiology, affect and health behavior and so on). Partner effects such as these are directly modeled in detail in many social psychological approaches to relationship processes (Badr, Carmack, Kashy, Cristofanilli, & Revenson, 2010; Butler, 2011; Lemay & Clark, 2008; Iida, Stephens, Rook, Franks, & Salem, 2010). We focus here on how attachment and dyadic processes contribute to health-related processes and outcomes because these relationship science exemplars have not been fully elaborated in the health psychology literature. The health processes in the framework are general, reflecting similar ones in models found in the health literature (Paths m/n, Berkman et al., 2000; Cohen, 2004; Smith, 2006; Uchino, 2009). For example, a large literature examines physiological responses and affective states as predictors of health and behavior outcomes (Chida & Steptoe, 2010; Dickerson, 2008; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Smith, 2006; Uchino, 2009). Thus, although a thorough

discussion of all relevant relationship science processes or health processes is outside the scope of this article, our goal is to illustrate the utility of integration to spur more detailed approaches.

Dyadic Component. At a conceptual level, adult attachment theory, akin to other major relationship science theories such as interdependence theory, emphasizes that relationships are dynamic and reciprocal; the reactions of one partner influence and are influenced by those of the other partner. To adequately capture these dyadic processes, research must be designed in a way that allows for an assessment of both partners' characteristics and outcomes. In addition, special data analytic methods are required that adjust for nonindependence between dyad members' responses (i.e., the correlation between partners' responses), and that allow for an evaluation of the extent to which each person's own characteristics, those of their partner, and the interaction between their own and their partner's characteristics predict outcomes of interest (see Kenny, Kashy, & Cook, 2006). For example, the Actor-Partner Interdependence Model (APIM; see Kenny et al., 2006) enables researchers to test the extent to which (a) characteristics of each relationship partner influence his or her own outcomes (actor effects), (b) characteristics of one relationship partner influence the other partner's outcomes (partner effects), and (c) characteristics of one relationship partner interact with those of the other member in predicting one or both partners' outcomes (interactive actor X partner effects). Ideally, these effects are modeled over time enhancing causal inferences. The APIM is one example of a family of models that can take into account nonindependence between partners as well as reveal distinct effects for actors, partners, and their interaction (e.g., Lyons & Sayer, 2005).

Although dyadic perspectives have become more common in some segments of health psychology (e.g., Badr, 2004; Hong et al., 2005; Roberts, Smith, Jackson, & Edmonds, 2009), many other health literatures have not completely capitalized on this perspective. For example,

many couple intervention studies include both partners but assess outcomes for patients only -- even though patient outcomes may depend heavily on a partner's reactions and behaviors (see Martire, Helgeson, & Saghafi, 2010). Furthermore, even in those health studies assessing actor and partner effects, it is rare for researchers to examine how characteristics of one partner when examined in combination with those of the other partner (i.e., an interactive actor X partner effect) might produce unique outcomes (c.f., Badr, 2004). This type of analysis, however, allows researchers to more fully capture how the relationship context might influence health outcomes. To illustrate, anxiously attached individuals may have more difficulty with adjustment to cancer when their partner is avoidant and therefore unlikely to provide a high level of reassurance and support in contrast to when their partner is secure and therefore better able to meet their need for reassurance and support. In the former case, interactions between spouses may become strained or conflictual, thereby exacerbating the anxiously attached patients' worries and potentially leading to poorer adjustment outcomes for both the patient and caregiver. Important interactive effects such as these would not be revealed when looking only at actor and partner effects in a study; instead, researchers must examine how the patient's attachment style, their partner's attachment style, and the interaction between the two predict outcomes for patients and for caregivers. In the sections to follow, we highlight the added value of relying on a dyadic approach in the conceptualization, design and analysis of health research.

Gender. Although we have not specifically depicted different processes for men and women in Figure 1, gender differences should be considered when evaluating links within our proposed model. For instance, men and women differ when coping with chronic disease in the context of their relationships (Badr, 2004). Across lab studies on social negativity, women also tend to show stronger cardiovascular and neuroendocrine reactions during marital conflict

compared to men (Kiecolt-Glaser & Newton, 2001). In contrast, men who engage in dominant behavior as a result of lab-based manipulations show heightened affective and physiological reactions compared to women, suggesting that dominance may be more consequential for men's health (Smith, Limon, Gallo, & Ngu, 1996). These gender differences may reflect a combination of biological (e.g., Taylor et al., 2000) and socialization processes (e.g., agency / communion, Helgeson, 2003), which result in greater sensitivity and effort in response to specific relationship transactions and coping with stressful events (e.g., Smith et al., 2011).

Novel features. The proposed model is the only integrated framework of which we are aware that examines mechanisms through which relationship concepts such as attachment may influence physiological processes, health behavior, and thereby impact health and disease outcomes. Furthermore, it emphasizes not only dyadic influences in understanding the connection between relationships and health but also points to the value of measuring mediating variables (e.g., relationship mechanisms, physiological processes). Few studies in the health literature have directly tested for mediation but such tests are essential for determining how relationship processes translate into better or worse health behaviors and outcomes (for current recommendations for mediational analyses, see Rucker, Preacher, Tormala, & Petty, 2011). In addition, this general framework offers a launching point for generating a variety of specific hypotheses and more specific models. For example, researchers might examine the effects of individual differences in communal/exchange orientation (Clark & Mills, 1979) or relational goals (Canevello & Crocker, 2011), either alone or together with attachment style (e.g., Clark, Lemay, Graham, Pataki, & Finkel, 2010) on downstream outcomes in the model.

Applications of the Model to Adult Health Issues

In the following sections, we examine the utility of our model for selected health domains. Consistent with our focus on adult attachment, we emphasize research with young and older adults. Space limits preclude a more comprehensive examination of all relevant areas in health psychology. However, we focus on several active areas of research that vary considerably in the degree to which they have incorporated attachment and other relationship science theories, methods, and findings, with some areas drawing more heavily on relationship science and others less so or not at all. Even when relationship perspectives are incorporated, they are rarely integrated with other health-related processes in the model (e.g., biological pathways).

Pregnancy / Birth Effects. Pregnancy is an ideal time to study interpersonal processes because it is a time when family, friends and partners are likely to be involved. It can also be a time of stress for couples during which attachment-related processes (seeking and providing care/support) may be particularly relevant (Rholes et al., 2011). However, the existing literature on infant and maternal health has not been guided by any strong theoretical frameworks for understanding relationships such as that provided by attachment theory.

Social support has captured the lion's share of attention, but it has not been consistently linked to birth outcomes in either observational or intervention research due to theoretical and methodological weaknesses (Dunkel Schetter, 2010). A few observational prospective studies have shown that greater prenatal support predicts more optimal fetal growth, higher infant birth weight, and reduced risk of low birth weight (e.g. Buka et al., 2003; Dejin-Karlsson et al., 2000; Hedegaard et al, 1996, reviewed in Dunkel Schetter et al., 2000; Dunkel Schetter, 2010). For example, in one study, social support from both baby's father and family mediated the beneficial effects of marriage on infant birth weight controlling for ethnicity (Latina vs. White), education, medical risk, and sex of the infant (Feldman et al., 2000). However, there are also many non-

replications, and support effects are typically stronger in subgroups such as African Americans, Latinas, or low SES women (Dunkel Schetter, 2010). Inconsistent findings may be due to different conceptions of social support. Many studies measure perceived support (which reflects more of an individual difference factor) rather than attempting to study supportive interactions. Our framework would argue that both are necessary, especially from a dyadic approach that takes into account both members of the couple, mother and father, their support exchanges, and detailed attention to relationship moderators and mediators.

Although pregnancy researchers recognize the importance of the couple relationship, few have drawn from relationship science concepts or theory to understand how the mother/father relationship during or after pregnancy influences maternal health, birth or child outcomes. An exception is a study in which partner support was carefully conceptualized and measured, and relationship factors were examined, together with individual dispositional predictors of support including attachment style (Rini et al., 2006). Pregnant women (N= 176) who were more securely attached reported receiving more effective emotional, task, and informational support from their partners (quality and quantity relative to needs), and less negativity in support interactions with the partner. More securely attached women also reported more reliance on their network, stronger kin collectivism, more emotional expression, and stronger conflict management skills. Furthermore, women who perceived more effective social support from their partners in mid-pregnancy had lower anxiety during pregnancy and postpartum, and reported less fearful and distressed infant behavior (Rini et al., 2006; Tanner et al., 2012). Additional research with 23 partners from this study indicated that when men evidenced a more positive caregiving style, a stronger interpersonal orientation, and/or greater relationship satisfaction, female partners rated their support as more effective (Rini & Dunkel Schetter, 2010). This study is a rare

example of a more elaborated relationship science approach to a health issue aligned with our framework in that it studied some of the pathways (Paths a/b, f/g, e), but not relationship mediators or outcomes.

In contrast to most studies of social support in pregnancy, research on the transition to parenthood has included both members of couples but with a primary interest in the time period *after* birth and on the topic of adjustment to parenting and parent well-being (e.g., Simpson et al., 2003). For example, Rholes et al. (2011) followed 192 couples having a first child from 6 weeks before birth through the first two years of the transition to parenting. This study concerned attachment and depressive symptoms following birth and is a prime example of how couples can be studied from a relationship science perspective using attachment theory. One finding of interest, for example, is that, when anxiously attached individuals perceived less support from their partners, men's depression increased over time and women's depression remained at a high level; however, when anxiously attached men and women perceived more support, their depressive symptoms decreased over time, illustrating Paths a/b and f/g of the framework. Extending this work earlier into pregnancy and measuring birth outcomes and postpartum health would be ideal from the standpoint of testing our framework.

By focusing on attachment style in both partners, and on both partners' perspectives of relationship processes, research on social support in pregnancy can identify which aspects of these processes are most valuable to target in pregnancy interventions. Past prenatal social support interventions have been plagued by an inability to improve outcomes even when they were large randomized controlled trials (Hodnett & Fredericks, 2003; Lu, Lu & Dunkel Schetter, 2005). However, none have used theory and predictive models to determine what aspects of a pregnant woman's social context are most potent and which processes may be instrumental in

influencing outcomes. By focusing on specific relationships (partner and mother of pregnant woman) and specific support needs, one study was more sophisticated than others and reduced low birth weight (Norbeck, DeJoseph & Smith, 1996). However, neither this nor other interventions have been specifically concerned with the dynamics of dyadic relationships, or intervened using a predictive model indicating what aspects of dyadic support or relationship processes are expected to influence outcomes with an intervention designed to improve those mechanisms. High risk pregnant women are low income, low educated and African American requiring transference of relationship science theory to new populations and contexts with skill and sensitivity. Limited knowledge is available on attachment in these populations, and addressing this gap represents a challenge and exciting opportunity for future researchers.

Self-regulation and Health Behaviors. Attachment processes are integrally related to how people regulate their emotions and behavior and therefore are likely to be important in predicting health behaviors. Although research connecting attachment style to specific health behaviors is sparse, the findings indicate that insecure attachment (anxiety, avoidance, or both) predicts health risks such as greater drug use, poorer body image, risky sexual behavior, greater alcohol use, poorer diet and less exercise in both adolescents (e.g., Cooper, Shaver, & Collins, 1998) and young adults (e.g., Feeney, Peterson, Gallois, & Terry, 2000). This work has generally focused on individual-level processes rather than examining connections between attachment and health behavior at the dyadic level, which could be fruitful. For example, studies might focus more on how teens' dyadic peer relationships (e.g., best friends, romantic partners) influence substance use and risky behavior. Furthermore, few studies have examined the processes through which attachment influences people's ability to regulate health behavior, (e.g., Paths a-i).

A growing literature in health psychology focuses how dyadic processes contribute to adult health behavior (Paths f/g) in areas such as weight control (e.g., Dailey, Romo, & Thompson, 2011), diabetes (Stephens, Rook, Franks, Khan, & Iida, 2010), HIV prevention (e.g., Burton, Darbes, & Operario, 2010), and smoking (e.g., in couples including a male cardiac patient, Vilchinsky et al., 2011). For example, one study examined whether specific social control strategies used by one spouse predicted the partner's self-reported change in a health behavior such as exercising, eating healthier foods, and quitting smoking (Lewis & Butterfield, 2007). Partners more effectively promoted change when they used positive control tactics (e.g., modeling the behavior) than when they used negative ones (e.g., inducing fear), suggesting that the quality of partners' communication may contribute to individuals' ability to adopt and maintain healthy behaviors. Similarly, when the spouses of diabetic patients reported using a negative control strategy, patients adhered less to their diet, whereas when spouses reported using positive control strategies, patients adhered more (Stephens et al., 2010). Notably, it was spouses' reports of their control strategies rather than patients' perceptions of spouses' strategies that predicted patients' dietary adherence (i.e., the findings revealed a partner effect), underscoring the importance of dyadic approaches that assess both partners' perceptions.

Although behavioral health research has already incorporated a dyadic approach to adult health concerns to some extent and examined some relationship processes, our model allows for the generation of additional potentially interesting questions about how members of couples might influence each other's health behaviors. Given the documented links between insecure attachment and risky health behaviors, for example, investigations of these issues in the context of couple dynamics will yield insights into how partners may help or hinder each other's efforts to change health-relevant behavior. An attachment perspective suggests that all individuals will

not benefit equally from a partner's overt attempts to encourage them to change their health behavior. One possibility is that avoidant individuals may not be receptive to partners' obvious attempts to influence their behavior because they are uncomfortable with depending on others, but they may respond more positively to more subtle attempts. Individuals' attachment styles, however, are only one piece of the picture, and the model calls for an investigation of how attachment together with a wide range of relationship mediators and outcomes such as partner responsiveness, commitment, and relationship quality might shape health behavior (Paths a-g).

Adult cancer/chronic disease. Health research on adults coping with illnesses such as cancer has examined the link between relationship processes and outcomes and affective states (Path f/g). For example, women adjusting to early stage breast cancer experienced less distress in discussing a cancer-related topic when their partners offered a reciprocal disclosure, showed humor or did not offer solutions (Manne et al., 2004b). In addition, breast cancer patients who engaged in protective buffering (e.g., hid worries from their partner) and their partners were more distressed if they also perceived the relationship as satisfying (Manne et al., 2007).

Although research on adjustment to illness has involved studies of couples, most of it has not utilized theories from relationship science to generate hypotheses, with some notable exceptions. For example, in work following from the interpersonal process model of intimacy (e.g., Laurenceau, Barrett, & Pietromonaco, 1998; see Reis & Shaver, 1988), cancer patients reported greater intimacy when they perceived greater partner disclosure, and this effect was mediated by perceived partner responsiveness (e.g., feeling understood, cared for; Manne et al., 2004a). In a 7-day diary study, breast cancer patients felt greater intimacy on days when their spouses reported providing support (vs. on days when they did not provide support), and spouses showed a parallel pattern (Belcher et al., 2011). Overall, partner responsiveness and support,

both central constructs in attachment theory and relationship science in general (Clark & Lemay, 2010), appear important to relationship functioning in couples coping with cancer (addressing Paths c-e in Figure 1), a finding that should generalize to other illnesses and health issues.

Individual differences in attachment style have been linked to affective states in studies examining only one partner's (the cancer patient's) perspective. In one cross-sectional study of 326 individuals with metastatic cancer, patients with more severe physical symptoms who also were more anxiously attached were more likely to experience depressive symptoms; however, this association was attenuated for those low in attachment anxiety (Rodin et al., 2007). This work raises several issues for future research. First, it may be that the link between attachment and affective states occurs through the relationship pathways depicted in Figure 1, a possibility that would need to be investigated in research examining both relationship partners. Second, an attachment perspective suggests that more severe disease symptoms may trigger greater threat for those with anxious attachment leading them to be more vulnerable to distress; conversely, secure attachment (e.g., low anxiety) may buffer individuals from distress even under threatening circumstances. Thus, another implication of this study that needs greater examination is that disease-related factors (e.g., health and disease outcomes in Figure 1) are not only a downstream outcome of attachment style but also may activate attachment concerns (path not shown in the model). Investigation of such questions would benefit from longitudinal designs to establish, for example, whether the link between attachment anxiety and depression becomes stronger as disease symptoms become more severe.

In general, attachment security facilitates emotional adaptation to stress (see Mikulincer & Shaver, 2007). Furthermore, attachment security may buffer individuals from distress via perceptions of support. Consistent with this idea, in one study, attachment security in end stage

cancer patients (most of whom were older and married) predicted greater perceived support (Path a/b), which in turn, predicted lower depression scores (Paths f/g; Rodin et al., 2007).

Although relationship processes and individual differences in attachment have received consideration in the cancer literature, our model points out some important gaps. For example, most studies of couples coping with cancer focus primarily on links within the dyadic processes component in our model (Paths c-e), and little work has examined other paths such as how relationship processes are linked to physiological responses, health behavior or subsequent disease outcomes. As one example, studies of couples in which one partner is at risk for cancer would benefit from examining how attachment-related couple dynamics (e.g., partner responsiveness, caregiving) during stressful interactions impact physiological stress responses (Path f-i), which have been shown to predict important health outcomes (see Miller et al., 2009). Furthermore, couples in which one or both partners are insecurely attached may be at greater risk of experiencing potentially harmful physiological responses (Paths a-i). For example, more avoidantly attached spouses have shown an increased inflammatory response (IL-6) after a conflict interaction (Gouin et al., 2010) and more insecurely attached dating partners show greater cortisol reactivity in response to conflict (Powers, Pietromonaco, Gunlicks, & Sayer, 2006). Examining connections among attachment, relationships processes and physiological responses is important because interpersonal factors (e.g., social support) can impact biological processes including neuroendocrine regulation, which in turn, can affect biological risk factors for cancer and tumor development and growth (see Miller et al., 2009 and Stefanek & McDonald, 2009).

Pain. The experience of chronic pain is relatively common and associated with significant social, psychological, and medical costs (Meredith, Ownsworth, & Strong, 2008).

Recently, Meredith and colleagues (2008) proposed an integrative attachment framework of chronic pain that is consistent with many features of our proposed model (e.g., attachment influencing support-seeking). However, our model extends their analysis and research in this area more generally by making salient a broader array of interpersonal processes (see Paths c-e), including social negativity. This extension is important as insecurely attached individuals may react to pain by using interpersonal strategies that lead to greater conflict in their relationships (Pietromonaco, Greenwood, & Barrett, 2004), which in turn may influence adjustment outcomes (see Meredith et al., 2008) such as the experience of pain and rehabilitation (also see Paths f-l).

Second, the dyadic features of the model allow for an incorporation of both patients' and partners' reactions to chronic pain. Few studies on pain take an explicit dyadic approach, which can facilitate a broader consideration of interpersonal processes. For instance, how do partners of chronic pain patients provide support or respond to catastrophizing to facilitate adjustment and recovery (Paths h/i)? Recent work suggests the promise of such a dyadic approach. For example, one study found greater agreement on pain severity between osteoarthritis patients and their spouse was related to better patient well-being (Cremeans-Smith et al., 2003). A recent study incorporating both attachment and dyadic perspectives found that less securely attached women (e.g., anxious) responded more negatively to experimentally-induced pain when they were with an anxiously attached partner (Wilson & Ruben, 2011). Although our framework is broader than most existing pain models, it might be used to refine these models in ways that make salient important interpersonal processes within a dyadic context.

Older Adults and Caregiving. A broad, active area of research in health psychology focuses on the mental and physical health consequences of caregiving. Caregiving broadly includes activities that require extraordinary care, typically going beyond normative standards

(Schulz & Quittner, 1998). It can occur in many contexts such as caring for a child with serious injuries or developmental disorders (e.g., traumatic brain injuries, schizophrenia) or a family member who has a chronic condition (e.g., cancer, Alzheimer's Disease). Indeed, an abundant literature has linked caregiving to adverse health outcomes (Pinquart & Sorensen, 2007).

Much of the caregiving work in older adults has focused on family caregivers of Alzheimer's Disease (AD) patients. Consistent with our model, interpersonal processes such as social support and the quality of the pre-illness relationship appear to influence links between caregiving and health (Paths f/g; Uchino, Kiecolt-Glaser, & Cacioppo, 1994). However, our framework makes salient several important areas for future research. First, little of this work has considered how individual differences in attachment (Paths a/b) might influence how individuals provide care to older family members or outcomes for both the caregivers and older adults, despite that this caregiving situation likely activates the attachment system (e.g., threat of losing the attachment figure, motivated attempts at maintaining felt security through helping behavior, Magai, 2008). A recent study illustrates the value of such an approach: attachment avoidance predicted higher caregiver burden and lower willingness to provide future care (Karantzas, Evans, & Foddy, 2010).

The importance of considering attachment processes in this research becomes especially important in light of an emerging literature suggesting that a higher proportion of middle-aged and older adults tend to have less secure and more avoidant attachment styles compared to their younger counterparts (Diehl, Elnick, Bourbeau, & Labouvie-Vief, 1998). The reasons behind these findings are not clear and may represent loss experiences or cohort effects (Magai, 2008). However, these findings suggest that working with avoidant older adults in a caregiving (or other health) context may be a more common experience compared to other stages of the lifespan, with

resulting implications for interpersonal tensions and complications with support (Paths a/b) that may influence health-related outcomes (e.g., Paths f/g and k/l).

Caregiving is also inherently an interpersonal phenomenon involving complex interaction patterns between a caregiver and care recipient, highlighting the need for greater dyadic approaches in some areas of caregiving research. Studies suggesting the utility of such approaches have appeared in some caregiving areas (Dorros et al., 2010; Hong et al., 2005; Manne et al., 2004b). For instance, greater responsiveness and lower negativity from parents have been associated with less externalizing behaviors and symptoms in children with severe traumatic brain injuries (Wade et al., 2011). Of course, an explicit dyadic approach is more difficult in some caregiving situations (e.g., family member with advanced Alzheimer's disease, terminal patients) but raises the intriguing question of how the dyadic interpersonal processes unfolding in our model might impact on the quality of life but also the rate of health declines in such care recipient populations (e.g., Paths f-i, k/l).

Some researchers have also conceptualized caregiving as a form of support provision and argued for the potential health benefits of being a support provider (Brown et al., 2009). In one longitudinal study, people who reported providing at least 14 hours of care per week to a spouse had lower mortality rates (Brown et al., 2009). Furthermore, individual differences in the inclination or general tendency to give informal support to others are related to lower ambulatory blood pressure during daily life, which predicts future cardiovascular risk (Piferi & Lawler, 2006). These findings suggest that greater attention to positive interpersonal processes in the model may benefit future work examining both the costs and benefits of caregiving.

Finally, most of the prior studies in the caregiving literature have focused on either adjustment (e.g., depression), relationships (e.g., relationship satisfaction), or physical health

(e.g., immune function) outcomes. Research in this area would benefit from a more integrative approach that examines these processes as mediators of longer-term health outcomes (Paths f-n).

Older Adults and Patient-Practitioner Relationships. Older adults typically have more interactions with the health care system due to chronic medical conditions. As a result, our model might be fruitfully applied to patient-health care provider interactions. Consistent with the model, a large literature has documented how interpersonal variables such as patient-practitioner communication and relationship quality are linked to cooperation with medical regimens and the course of treatment (Paths f-n; e.g., Frostholm et al., 2005).

Few studies, however, have examined how attachment might influence these health provider interactions, leading to downstream effects on health outcomes (Paths a/b). Although attachment is thought to be linked to close relationships, it has been argued that patients may desire strong attachment relationships with their regular provider to help them cope with health threats and that attachment may set the basis for patients' expectations and behaviors towards practitioners (Noyes et al., 2003). For instance, doctors rated relationships with insecure patients as more difficult, although they were unaware of patients' attachment styles (Maunder et al., 2006). Also, dismissing-avoidant diabetics who perceived low quality communications with their provider showed poorer metabolic control (Ciechanowski, Katon, Russo, & Walker, 2001).

Although this area of research takes an interpersonal view (e.g., communication), it also could benefit from a more explicit dyadic approach that takes into account multiple perspectives and their synergistic influences (see Figure 1, LeBlanc, Kenny, O'Connor, & Legare, 2009). This approach appears important as patients and providers have distinct goals and perspectives in communicating with each other (Roter et al., 1997). Indeed, patients' and practitioners' reports of the causes of symptoms are only moderately related (Greer & Halgin, 2006). The emphasis

on patient-centered communication, including on how practitioners can better understand patients' illness experiences (e.g., Stewart et al., 2000), highlights the need to consider such dyadic processes and if they predict more downstream health-related outcomes (Paths f-n). The model also makes salient that the patient's spouse or close others might facilitate or impede patient-practitioner interactions (e.g., enhancing understanding or conflict regarding a treatment regimen, Paths c-e) in ways that subsequently influence other aspects of the model.

Implications for Health Interventions

Our theoretical framework on relationship orientations such as attachment, relationship processes, and health has many implications for increasing the effectiveness of interventions for married and cohabiting couples and other dyads. A recent meta-analysis of 33 studies on couple-based interventions for chronic illness including cancer, arthritis, cardiovascular disease, chronic pain, HIV and Type 2 diabetes revealed that such interventions are beneficial for depressive symptoms, pain, and marital functioning, although the effect sizes were small (Martire et al., 2010). As Martire et al. (2010) note, however, most researchers have not assessed outcomes for both the patient and partner, and given the reciprocal effects of dyadic processes (as illustrated in the figure), interventions might be improved by considering both partners' perspectives. For instance, partners may lack insight into the level of pain or fatigue experienced by a patient, which can lead to less responsive support (Lehman et al., 2011).

In addition, couple interventions typically do not take into account individual differences, but as our model suggests, each partner brings specific relationship orientations such as an attachment style and related expectations and beliefs about the relationship to the situation. It is estimated that approximately 55-65% of adults are secure, 22-30% avoidant, and 15-20% ambivalent, with some evidence that avoidant styles are more prevalent in older adult samples

(Magai, 2008). Thus, it is very likely that a couples intervention will include at least one insecurely-attached person. This is important because an intervention that is effective for one pair such as a husband and wife who both have secure attachment styles may not work well for another, for example, an anxious wife with an avoidant husband. To illustrate further, a secure husband who is comfortable with closeness and intimacy would be hypothesized to respond favorably to an intervention designed to help him be more supportive to facilitate his wife's adjustment to breast cancer, but an avoidant husband who is uncomfortable with intimacy is not expected to be receptive to an intervention framed in this way and may require a different variation. Similarly, patients' own attachment styles also are likely to be important for how they respond to supportive attempts from their spouse. For example, a study of dating couples suggests that the effectiveness of emotional or instrumental support will depend on the recipient's attachment style; individuals showing secure attachment to parents were more calm after their romantic partner provided emotional support during a conflict interaction, whereas more dismissing avoidant partners were more calm after receiving instrumental (concrete, rational advice) support (Simpson, Winterheld, Rholes, & Oriña, 2007). Thus, utilizing attachment styles, which have broad applicability, underlines the importance of tailoring interventions to take into account not only individual patients' or target persons' needs but also the match between relationship partners in how secure, anxious or avoidant they each are.

Although our model focuses on individual differences in attachment styles, interventions can consider other relationship-related individual differences such as relationship goals (see Canevello & Crocker, 2011 and Gable & Impett, in press). For example, Canevello and Crocker (2011) report work showing that compassionate relationship goals (which focus on another's needs and well-being) motivate people to be more responsive to a close other who, in turn, is

more responsive to them. Furthermore, when people who hold more compassionate goals give more support to another, they also show a decrease over time in their own psychological distress. This work suggests that a promising direction for future research on health interventions would be to train people to use compassionate goals to be more responsive to one another and to regulate distress (see Canevello & Crocker, 2011).

Clearly, close relationship partners influence each other's health behavior given that they share an environment and daily routines. Interventions designed to change one spouse's behavior such as weight loss or smoking cessation spill over to influence the other spouse in many ways including his or her behavior (e.g., Gorin et al., 2008; Pollak et al., 2006). In a longitudinal study of pregnant smokers and their partners, women were more likely to quit smoking late in pregnancy when both they and their partners reported higher levels of earlier positive support from the partner (e.g., helps her think of substitutes for smoking, compliments her for not smoking), but women's reports alone did not predict smoking cessation (Pollak et al., 2006). Other research has examined whether more specific social control strategies used by one spouse predicted the partner's self-reported change in a health behavior such as exercise, diet, and smoking (Lewis & Butterfield, 2007; Stephens et al., 2010). This work has found that partner attempts to promote change are more effective when partners use positive control tactics (e.g., modeling the behavior) than negative ones (e.g., inducing fear). These effects have been shown even after controlling for social support from the spouse (Lewis & Butterfield, 2007), indicating the value of examining other aspects of interpersonal exchanges such as influence tactics, not only social support. Thus, relationship related processes such as social support and social control have been examined as predictors of health behavior, but otherwise, research investigating Paths f and g in the model is lacking and can lend increased specificity to guide relevant interventions.

Understanding the dyadic relationship processes that influence health-promoting behaviors is important for developing more effective health behavior change programs that incorporate both partners (see Lewis et al., 2006). This goal calls for research that examines how a wider range of relationship mediators and outcomes such as partner responsiveness and relationship quality shape health behavior. To our knowledge, no studies have directly examined how individual differences in attachment styles and other relationship concepts might alter the link between relationship mediators/outcomes and health behavior. For example, avoidant individuals may not be receptive to partners' obvious or explicit attempts to be supportive or to influence their behavior because they are uncomfortable with depending on others, but they may respond more positively to more subtle or implicit attempts.

The focus on dyads also makes salient the need for more comprehensive couples-based interventions. As an example, couples interventions in the cardiac literature focus mainly on increasing spousal involvement or support around basic tasks involved in managing the chronic condition (Sher & Baucom, 2001, see also Levine et al., 1979 for an early example). Although effective, these interventions may be enhanced by incorporating knowledge from relationship science. For instance, the Partners for Life intervention encourages cardiac patients and their spouses to adopt healthy behavioral change, increase social support and motivation for such changes, and decrease relationship stress more generally via skills training (e.g., problem-solving, Sher et al., 2002).

Finally, most health interventions focus on individuals who are at risk (secondary) or who already have medical problems (tertiary). Alternatively, relationship interventions can be considered a form of primary prevention for healthy individuals to enhance overall health and well-being and prevent mental and physical health problems. Given that many chronic diseases

develop over decades, it may be advantageous to consider primary prevention efforts directed at interpersonal processes early in relationships such as among newlyweds. Evidence-based marital interventions designed to prevent health conditions of individuals have not yet been considered and may offer promise for improving individuals' health trajectories.

Recommendations for Future Research

This article has focused on the importance of studying close relationships more thoroughly as they have profound relevance to health throughout the lifespan and to specific health topics such as pregnancy and birth, self-regulation and health behavior, adjustment to chronic disease, caregiving and more. The themes were several: First, dyadic relationships are critical to our health, and we emphasized close relationships such as those with a marital partner, which have received the most attention in relationship science, though most of our arguments are certainly not exclusive to dyads. Second, a next generation of studies of couples and health should involve both partners, and not only perceptions by one individual in the couple. Third, relationship science theories bring richness and value to the study of health over the lifespan and, in particular, certain theoretical perspectives such as attachment theory have a long and distinguished history of explanatory power and bring innovation to health psychology research on close relationships. In the remainder of the article, we highlight some directions and make recommendations for future research.

Our model emphasizes not only the importance of taking into account dyadic effects by assessing relationship processes for both partners, but also the reciprocal influences between partners. An important consideration for the design of future investigations in health is that dyadic data vary in the degree to which they reflect reciprocal, dynamic processes between couple members (see Butler, 2011). For instance, a methodological choice to use self-reports

from both partners (which are dyadic data) does not provide an understanding of couples' perceptions and behavior as they are interrelated and unfold during interactions. Thus, the implementation of dyadic interaction paradigms may add richness to some health studies.

To illustrate from the perspective of attachment theory, romantic partners are thought to influence each other's psychological and physiological responses through coregulation (see Sbarra & Hazan, 2008), which is an inherently dyadic process occurring over time in a close relationship. Research on coregulation is fairly new, but many exciting questions can be posed about the potential links between coregulation and health: To what extent do partners up- or down-regulate one another's health-related physiological responses (e.g., cortisol, oxytocin)? Intriguing work finds, for example, that wives' cortisol reactivity is heightened when their own negative behavior is followed by their husband's withdrawal (Kiecolt-Glaser et al., 1996), but many questions remain about when and how such coregulation processes may occur (Sbarra & Hazan, 2008). Do such physiological linkages predict the extent to which partners adjust to a health condition or engage in health-protective or health-damaging behaviors? Might they contribute to major health outcomes over time such as a repeat myocardial infarction, remission of cancer or poor diabetic control? And, importantly, do individual differences in attachment style moderate these associations? Addressing questions such as these may better reveal how dyadic relationship processes translate into health-related processes, behaviors, and outcomes.

Our model suggests that relationship constructs and processes operate together to produce particular health behaviors and outcomes over time. However, most studies have examined only one or two of these relationship processes at a time (e.g., social support and affective or cardiovascular reactivity). Similarly, past research rarely tests complex models of dyadic interactions or relationship mediators influencing physiological processes. For example, prior

work has found that marital quality predicts lower cardiovascular mortality (e.g., Coyne et al., 2001; King & Reis, 2011), but our model further suggests that marital quality is a function of dyadic processes, which ultimately are linked to health and disease outcomes via other relationship processes, physiology, affect, and health behaviors. Tests of integrative models, even more elaborated than our general one, that are tailored to specific health issues can evaluate a postulated chain of mediating factors which will be important for advances in health psychology and for theory-building in relationship science. Furthermore, research following from such models can help to pinpoint which relationship constructs and processes might be most effective to target in health-related interventions. Strongly testing such models would require analyses of mediating factors using either covariance structural modeling or appropriate mediational analyses (MacKinnon, 2008; Rucker et al., 2011). Thus, collaboration with quantitative experts and across disciplines is strongly recommended.

A disproportionate amount of health research has examined three primary concepts -- social support, social negativity, or relationship satisfaction -- thus, these constructs are already known in health psychology; however, our framework emphasizes the importance of integrating a wider range of relationship variables from the social psychological literature into health psychology research as predictors and mediators of health outcomes. For example, couples' positive interactions (i.e., not problem-focused or conflict-oriented) have rarely been investigated in the context of health. Yet recent research has shown that sharing positive events, termed *capitalization*, predicts better relationship health (see Gable & Reis, 2010). Whether and how such events predict physical health is an open question. It is possible that the effects of such positive exchanges on relationship functioning that typically occur under low stress may create a context in which couple members are able to more effectively influence each other's health in

positive ways such as by encouraging behavior change or cooperation with a medical regimen. Another possibility is that couples who engage in capitalization early in their relationship history may be predisposed to better manage major health events that develop later on.

Throughout this article, we have suggested several ways in which individual differences in attachment might alter how relationship processes are relevant to pregnancy outcomes, health behavior, adjustment to cancer, coping with pain, and issues facing older adults. In each of these areas, we have suggested that approaches that treat all individuals or couples in the same way may not be effective; for example, couple-based interventions are apt to be more effective when they are tailored to fit the specific attachment orientations of individuals and their partners. Note that we are not recommending interventions to change individuals' attachment styles, which may be a difficult, lengthy, and costly process or even an insurmountable goal, especially in the face of life threatening illnesses such as cancer. Instead, we are suggesting that interventions be tailored to specific attachment-related characteristics such as the degree to which patients and partners are comfortable with receiving or giving care or disclosing to their partner.

Another important direction will be to expand and adapt the proposed framework to generate hypotheses across other attachment-relevant relationships in adulthood (with parents, siblings, friends, and children; see Doherty & Feeney, 2004). Emerging work suggests the value of applying an attachment perspective to understand relationships between adult children and their older parents who need care (e.g., Karantzas, Evans, & Foddy, 2010), relationships in which parents are caring for young children with a chronic health problem (e.g., Berant, Mikulincer, & Shaver, 2008), and in patient-practitioner relationships. Applying this perspective to patient-practitioner relationships, for example, represents a potentially exciting direction that we could not expand on in detail. However, as noted, insecurely attached patients have more

difficulty in their relationships with health care providers (e.g., Maunder et al., 2006; Noyes et al., 2003), which may impact a variety of health care issues including utilization of services, cooperation with treatment plans, and understanding diagnosis and treatment options.

Furthermore, it will be important to investigate how a patient's close relations (spouse, relative, friend) who may accompany him or her to appointments might either heighten or reduce the negative effects of insecure attachment on the doctor-patient relationship.

Relationship science research has revealed some gender differences in the concepts and processes in the model such as social support, emotion regulation, and physiological responses that beg for a more focused understanding of gender roles as they operate in relationships and influence health. Much of this work has focused on married couples given the centrality of such relationships for health (Kiecolt-Glaser & Newton, 2001). However, other types of gender-linked health processes have been less studied from a truly dyadic perspective. For instance, gender differences may arise in patient-practitioner interactions, which have implications for outcomes (e.g., disclosure of symptoms, Martin & Lemos, 2002). Important gender differences also emerge in friendship support processes (Barbee, Gulley, & Cunningham, 1990). Extending work to investigate the role of gender in dyadic contexts will help in formulating more specific models that would be of interest to health psychologists and can guide relevant interventions.

Finally, few studies in relationship science have incorporated diverse samples in terms of socioeconomic status and ethnicity. Health psychology, in contrast, has embraced the major issue of health disparities between socioeconomic groups and racial and ethnic groups in the United States, and it increasingly is becoming international in its understanding of diversity. Given that ethnicity, race, culture and social class are highly influential in health processes and that health disparities are prevalent and a high priority for public health, future investigations

with a broader range of participants will yield a more generalizable and impactful relationship science.

Of note, relationship science is itself an interdisciplinary science that involves not only psychology but also sociology, anthropology, communication studies, and other disciplines. However, uniform within relationship science is its inherent theory-driven approach, allowing for the generation of precise questions about the mechanisms underlying links between close relationships and health. The emphasis here has been on social and personality perspectives, and by providing an example of a specific theoretical framework, we have illustrated how this approach can yield insights into the critical links between close relationships and health and reveal valuable directions for future research. We selectively focused on attachment theory because it is a comprehensive and empirically supported framework and because attachment processes are centrally implicated in how people respond to threats such as those arising from physical pain or the diagnosis of a serious life-threatening illness. Attachment theory is particularly useful for understanding how people engage with relationship partners when they or their partners face distressing circumstances and the extent to which such engagement helps or hinders the regulation of emotion and behavior.

Other relationship science theories (e.g., interdependence theory, communal/exchange theory, relational goal approaches) offer complementary perspectives that also can be utilized to promote health and well-being. For example, interdependence theory focuses to a greater extent than attachment theory on the immediate situational features that shape specific interactions between partners, and such features may be amenable to change through interventions. Indeed, one model of health behavior change has already drawn on interdependence theory to suggest how couple members' motivation may be transformed such that individuals relinquish goals that

promote their own self-interest and instead adopt goals that will yield the best outcomes for both partners (Lewis et al., 2006). Although empirical tests of this model are needed, it offers another potentially promising application of relationship science to research designed to promote the health and well-being of both individuals and couples.

Health psychology and relationship science have historically progressed along independent trajectories in their development as relatively young disciplinary areas. At this juncture where each has matured for several decades, these two areas have much to offer each other. Health psychology can benefit from the considerable theoretical and methodological progress in relationship science, and relationship science can benefit equally from research findings and the large and widespread impact that is possible in health psychology. The framework proposed here highlights many specific opportunities for integrating theory with future research and intervention development in health and in ways that we hope will enhance both relationship science and health psychology. We further aspire that this analysis will encourage collaborations among research scientists in health, behavioral medicine, psychological science and related fields in the conduct of research aimed to expand our knowledge of precisely how close relationships influence, and are influenced by, health outcomes and behaviors.

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Figure Caption

Figure 1. A Theoretical Framework for Investigating Dyadic Relationship Processes and Health.

