

Marital Functioning and Physical Health: Implications for Social and Personality Psychology

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Abstract

Marriage – the most important adult relationship in most people’s lives – has been theorized to affect biological processes, physical health, and mortality. This article highlights key findings in marriage and health research, focusing on the interpersonal processes through which marriage has been proposed to affect health. A model of marriage and health is presented that incorporates both main and stress-moderating effects of negative marital experiences – *marital strain* – and positive marital experiences – *marital strength*. Although many more studies have investigated marital strain than marital strength, current evidence suggests that both have potent effects on biology and health. The article concludes with a discussion of implications of this research for social and personality psychology, focusing on insights that may be gained from basic relationship science. Examples of three areas of relationship research – intimacy processes, commitment processes, and dyadic analysis – and their potential relevance for marriage and health research are presented.

The benefits of social relationships for physical health have repeatedly been demonstrated. Much has been made of the fact that those who are married tend to be healthier than those who are unmarried (Burman & Margolin, 1992). However, the mere presence of a spouse is not always protective. An unhappy marriage can itself be a stressor and can exacerbate the influence of other outside stressors (e.g., work, childrearing, death of a parent) on health. Two major reviews have documented the effects of marital functioning on physical health (Burman & Margolin, 1992; Kiecolt-Glaser & Newton, 2001). While marriage undeniably influences health in important and fundamental ways, the specific psychological and biological pathways through which marriage exerts its effects on the body are unclear.

The purpose of this article is to provide a brief primer on the effects of marital functioning on physical health. I begin by laying out a theoretical framework for the work in this area. This framework builds on models of marriage and health presented by Burman and Margolin (1992) and Kiecolt-Glaser and Newton (2001) in their seminal reviews of this topic, with an emphasis on social processes proposed to underlie the links between marriage and health. I then present an overview of the marriage and health literature, focusing specifically on the effects of *marital functioning* – as measured both by self-reported marital quality and observational measures of marital interaction – on physical health. Finally, I discuss ways in which the study of marriage and health could benefit from greater input from social and personality psychologists and briefly outline some exciting recent findings from relationship science that could impact the study of marriage and health.

Theoretical Models Predicting Effects of Marital Functioning on Health

Two main types of models have been proposed to explain how marriage influences physical health: *main-effect* models and the *stress-buffering* model. I briefly describe each of these models in turn below.

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1 *Main-effect models*

2 The basic idea behind main-effect models is that high levels of social support are health
 3 promoting, regardless of whether or not one is under stress (Cohen, 2004; Cohen & Wil-
 4 lis, 1985). Main-effect models most often have been discussed in connection with the
 5 beneficial effects of marital status on health (Burman & Margolin, 1992): simply being
 6 married is considered evidence of social support, and being unmarried prevents access to
 7 this form of support. This theory is usually considered in terms of social integration,
 8 whereby greater integration into one's social network – such as identity, purpose, self-
 9 worth, and positive affect – produce health-promoting activities (Berkman, Glass, Bris-
 10 sette, & Seeman, 2000; Cohen, 2004).

11 However, more broadly considered, main-effect models predict that positive marital
 12 dimensions – which I refer to collectively as *marital strength* – as well as negative marital
 13 dimensions – called *social strain* (Burman & Margolin, 1992) – directly affect physical
 14 health irrespective of the moderating effects of marital relationships on the links between
 15 outside stressors and health. Much of the early research on marriage and health focused
 16 on negative aspects of marital interactions. Borrowing laboratory observational methods
 17 developed mainly by social and clinical psychologists, these studies investigated how neg-
 18 ative behaviors during problem-solving discussions were linked to physiology (e.g., Gott-
 19 man & Levenson, 1992). Other studies examined whether those who reported being in
 20 unhappy marriages had worse health and greater mortality risk than those in happier
 21 marriages (e.g., Helgeson, 1991; Hibbard & Pope, 1993). Social strain theory (Rook, **1**
 22 1990) addresses how negative relationships can adversely affect well-being, and in turn,
 23 physical health (Burman & Margolin, 1992). With social strain (which I refer to as *marital*
 24 *strain* in the context of marriage), unhappy marriages are theorized to directly cause
 25 health problems – irrespective of any other outside stressors that are present, such as
 26 work stress.

27 Marital strength is proposed to influence health through its impact on positive psycho-
 28 logical states. Positive psychological states, in turn, are proposed to be beneficial for
 29 physical health because people are more motivated to take better physical care of them-
 30 selves (Cohen, 1988) and via enhanced immune function (Danner, Snowdon, & Friesen,
 31 2001; Njus, Nitschke, & Bryant, 1996; Pressman & Cohen, 2005). Although the major-
 32 ity of marriage–health studies have focused on negative aspects of marital interactions, a
 33 small but growing number of studies demonstrate that positive aspects of marriage are
 34 associated with better health (e.g., Robles, Shaffer, Malarkey, & Kiecolt-Glaser, 2006;
 35 Zautra et al., 1998). Consistent with this idea, negative and positive aspects of relation-
 36 ships are often found to be independent of one another, each uniquely predicting psy-
 37 chological and physical functioning (Bolger, DeLongis, Kessler, & Schilling, 1989; Evans,
 38 Doyle, Hucklebridge, & Clow, 1996; Robles et al., 2006; Seligman & Csikszentmihalyi,
 39 2000).

40 I include studies of the effects of marital adjustment on health under the category of
 41 marital strengths. Traditional measures of marital adjustment – such as the Dyadic Adjust-
 42 ment Scale (Spanier, 1976) and the Marital Assessment Test (Locke & Wallace, 1959) –
 43 incorporate both positive and negative elements of marriage, but are scaled to distinguish
 44 happy couples from unhappy ones (e.g., higher scores on these measures are meant to be
 45 indicative of greater satisfaction and adjustment). While these studies offer compelling
 46 evidence that being satisfied in one's marriage has implications for physical health,
 47 whether or not the benefits for health are attributed to the presence of positive aspects or
 48 the absence of negative aspects of marriage is unclear.
 49

Stress-buffering model

Whereas main-effect models focus on the direct effects of marriage on health, the stress-buffering model (Cohen & Willis, 1985) addresses how the negative effects of stress – that is, stress occurring outside of the marriage itself – are diminished by the presence of social support. The stress-buffering model has been the primary model explaining how social support impacts physical health. This model predicts that social connections are health enhancing because they provide psychological and material resources needed to cope with stress. Importantly, this model predicts that greater social support leads to better health *only for those going through stressful experiences*. In the context of marriage, the stress-buffering model predicts that happier marriages are associated with better physical health through their moderating effect on the links between stress and health. Statistically, supporting evidence for the stress-buffering model would be an interaction of stress and marital satisfaction (or other measure of marital functioning).

Considering these theories together, we would predict: (i) from main-effect models that negative aspects of relationships have a direct and deleterious effect on health and that positive aspects of marital functioning have a direct and positive effect on health, and (ii) from the stress-buffering model that the effects of outside stressors on health will be moderated by marital functioning. While these theories have mostly emerged from different lines of research, the processes accounted for by them are not necessarily mutually exclusive. Thus, occurring separately or in tandem, there may be negative elements of a marriage that are directly harmful for health, positive elements that are directly beneficial for health, and elements of marriages that moderate (for better or worse) the effects of stress on health.

Figure 1 illustrates the hypothesized effects of marital functioning on physical health. In this model, marital strain (negative aspects of marriage) and marital strength (positive aspects of marriage) both have main effects on health as well as moderating effects on

COLOR

Hypothesized effects of marital functioning on physical health

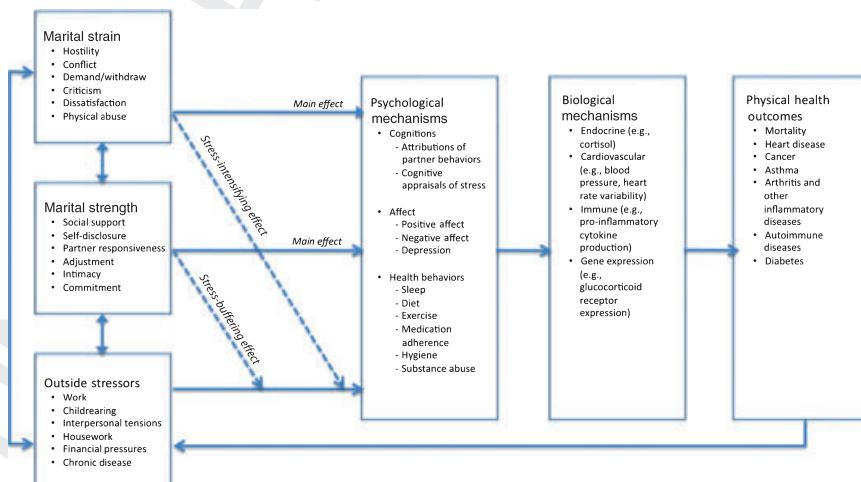


Figure 1 Conceptual model illustrating how marital functioning influences physical health directly via psychological and biological pathways and indirectly via its moderating influence on the effects of outside stressors (either stress-intensifying or stress-buffering).

1 associations between outside stressors and health. With regard to moderating effects, I
 2 make a distinction between the *stress-buffering* effect of marital strength variables and the
 3 *stress-intensifying* effect of marital strain variables. Although both marital strain and marital
 4 strength are proposed to moderate the effects of outside stressors on health, only marital
 5 strength should buffer, or protect against the negative health effects of stress – whereas
 6 marital strain should intensify, or exacerbate those effects. Because the focus of this review
 7 is on the interpersonal aspects of the influence of marriage on health, individual difference
 8 variables are not included in this model. However, it should be noted that individual dif-
 9 ferences, including gender, personality traits, and attachment – particularly gender – all
 10 have been found to moderate the effect of marital function on health and have been the
 11 focus of comprehensive reviews elsewhere (e.g., Kiecolt-Glaser & Newton, 2001).

12 **Evidence for the Effects of Marital Functioning on Physical Health**

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 14
 15 In this next section, I give a broad overview of findings relating to the effects of marital
 16 functioning on physical health. This section is grouped into three types of studies: (i)
 17 studies that test marital strain main effects, (ii) studies that test marital strength main
 18 effects, and (iii) studies that test stress-buffering effects. The focus of this review is specifi-
 19 cally on studies incorporating objective health outcomes, broadly defined to include sub-
 20 clinical and clinical outcomes (e.g., cardiac events and hospitalization) and mortality as
 21 well as physiology – including cardiovascular reactivity, immunological, and neuroendo-
 22 crine measures.

23 *Evidence for marital strain effects*

24
 25
 26 Most marriage and health studies have focused on the deleterious health effects of nega-
 27 tive marital experiences. These studies offer compelling evidence for marital strain effects,
 28 demonstrating that stressful marriages can impact clinical health outcomes as well as
 29 upstream physiological processes.

30 A small number of recent studies have shown that negative aspects of marriage are
 31 associated with early signs of disease and prospectively linked to morbidity and mortality.
 32 For example, in a sample of 300 married couples free from diagnosed coronary artery dis-
 33 ease (CHD), spouse ratings of both anger and antagonism were significantly associated
 34 with coronary artery calcification severity (Smith et al., 2007). In a population-based pro-
 35 spective study of Swedish women with clinically diagnosed CHD, marital stress – but not
 36 work stress – was associated with 2.9-fold increased risk of recurrent cardiac events
 37 (Orth-Gomer et al., 2000). Emotional inhibition in the context of marriage – which is
 38 associated with lower relationship quality and intimacy (Laurenceau, Barrett, & Rovine,
 39 2005; Reis & Shaver, 1988) – may be particularly detrimental to health, including mor-
 40 tality. For example, in a large sample of women from the Framingham Heart Study,
 41 women who ‘self-silenced’ (inhibited their emotions) during conflict with their spouse
 42 had four times the risk of dying 10 years later compared with women who did not
 43 (Eaker, Sullivan, Kelly-Hayes, D’Agostino, & Benjamin, 2007). Several studies – most
 44 conducted during the 1990s – have shown that negative behaviors during laboratory
 45 marital interactions to be linked to cardiovascular reactivity (Brown & Smith, 1992;
 46 Brown, Smith, & Benjamin, 1998; Ewart, Taylor, Kraemer, & Agras, 1991; Morell &
 47 Apple, 1990; Newton & Sanford, 2003; Smith & Brown, 1991).

48 Led by Kiecolt-Glaser and colleagues, perhaps the largest area of growth in research on
 49 marital strain and health has been in studies incorporating immunological and hormone

measures (Barnett, Steptoe, & Gareis, 2005; Kiecolt-Glaser et al., 1993, 1997, 2005; Loving, Heffner, Kiecolt-Glaser, Glaser, & Malarkey, 2004; Malarkey, Kiecolt-Glaser, Pearl, & Glaser, 1994; Miller, Dopp, Myers, Stevens, & Fahey, 1999). In one early study, analyses of immune data from newlywed couples suggested that physiological changes were significantly related to hostile behavior only, not avoidant, positive, or problem-solving behaviors (Kiecolt-Glaser et al., 1993). Among men high in cynical hostility, anger displayed during laboratory marital conflict is associated with increases in natural killer (NK) cell numbers and cytotoxicity, while among men low in cynical hostility, anger is associated with smaller increases in NK-cell cytotoxicity (Miller et al., 1999). More recent studies have incorporated both observational behavioral measures as well as measures tapping into cognitive processes. For example, in a study examining demand/withdraw patterns in older couples, husbands who perceived greater wife demand/husband withdraw patterns in their marriage had greater cortisol responses during a conflict discussion; interestingly, actual demand-withdraw behaviors measured during a laboratory interaction did not relate to cortisol responses (Heffner et al., 2006).

Almost no studies have examined the links between marital strain, physiology, and health outcomes simultaneously. It thus remains unclear whether the physiological changes that occur in response to marital strain are responsible for later health problems. One promising model for studying the links between marital processes, physiology, and health is wound healing. In a recent study (Kiecolt-Glaser et al., 2005), blister wounds made prior to two laboratory marital discussions (one supportive, one a disagreement) healed 60% more slowly among couples who demonstrated consistently higher levels of hostile behaviors across both their interactions. Further, high-hostile couples also produced relatively larger increases in plasma IL-6 and tumor necrosis factor alpha values (markers of inflammation) the morning after a conflict compared with low-hostile couples. Future research using this type of paradigm will help elucidate the pathways through which stressful marriages affect physiological functioning and, in turn, health outcomes.

Evidence for marital strength effects

Although marital relationships elicit both positive and negative behaviors, research has mainly focused on the latter. In early studies that made explicit contrasts, negative behaviors appeared to be more closely tied to physiological changes than positive behaviors (Ewart et al., 1991; Kiecolt-Glaser et al., 1993, 1996). However, these studies all involved laboratory tasks in which couples attempted to resolve a disagreement, a paradigm that promotes negativity and provides relatively few opportunities for positive behaviors. Researchers are now beginning to turn to alternative laboratory discussion paradigms specifically designed to elicit positive behaviors (Nealey-Moore, Smith, Uchino, Hawkins, & Olson-Cerny, 2007).

A large gap in the literature relates to how positive marital behaviors relate to clinical outcomes and mortality. One study of 87 postmyocardial infarction patients reported that patients in high-disclosure marriages were much less likely to be rehospitalized or report chest pains 1 year later compared to those in low-disclosure marriages. The link between positive marital behaviors and mortality is unknown.

Preliminary evidence suggests that positive behaviors are linked to physiological changes. For example, couples categorized as having a positive interaction style showed marked increases in cortisol during a conflict discussion, whereas couples with negative interaction showed a nonresponse (Fehm-Wolfsdorf, Groth, Kaiser, & Hahlweg, 1999). The authors interpreted the increase in cortisol as a 'healthier' stress response to stress.

1 Marital conflicts in unhappy couples may act as chronic stressors, leading to dampened –
2 or less ‘healthy’ – cortisol responses to stress. This notion is consistent with the idea that
3 repeated exposure to stressors leads to a weakened cortisol response that develops when
4 the body’s stress-response system is challenged too often (McEwen, 1998; Olsson &
5 Sapolsky, 2006). Marital strength variables are associated with cardiovascular functioning
6 as well: in one study, newlywed wives and husbands demonstrated lower blood pressure
7 after laboratory conflict when spousal support satisfaction was higher (Heffner, Kiecolt-
8 Glaser, Loving, Glaser, & Malarkey, 2004). There is evidence that there may be
9 interactive effects of positive and negative behaviors, beyond main effects. For example,
10 supportiveness during highly negative laboratory interactions of newlywed couples
11 contributed to steeper ACTH and cortisol declines in wives, suggesting that construc- 2
12 tively engaging in the resolution of disagreements may promote adaptive physiological
13 responses (Robles et al., 2006).

14 A large number of studies have looked at the effects of marital adjustment on physical
15 health. Most of the earliest studies of marriage and health used self-reported marital
16 adjustment as their sole measure of marital functioning. At least 10 studies have investi-
17 gated the links between marital adjustment and morbidity and mortality (Baker, Szalai,
18 Paquette, & Tobe, 2003; Baker et al., 1998, 2000; Coyne et al., 2001; Gallo et al., 2003;
19 Haynes, Feinleib, & Kannel, 1980; Hibbard & Pope, 1993; Janicki, Kamarck, Shiffman,
20 Sutton-Tyrrell, & Gwaltney, 2005; Kulik & Mahler, 2006; Marcenes & Sheiham, 1996;
21 Rohrbaugh, Shoham, & Coyne, 2006; Troxel, Matthews, Gallo, & Kuller, 2005). The
22 evidence suggests strong links between adjustment and physical health outcomes, particu-
23 larly with regard to cardiovascular disease (Baker et al., 2000; Janicki et al., 2005; Kulik
24 & Mahler, 2006). For example, in a prospective study of 103 married or cohabitating
25 couples with no clinical evidence of CAD, those who were most satisfied in their mar-
26 riages had lower indexed left ventricular mass 3 years later (Baker et al., 2000).

27 Although most studies of marriage that have looked at mortality as an outcome have
28 primarily been interested in the effects of marital status, a handful of studies have now
29 looked at the effects of marital adjustment (Baker et al., 1998, 2000; Eaker et al., 2007;
30 Hibbard & Pope, 1993). The evidence so far is somewhat mixed. In a large random sam-
31 ple of HMO members, equality in decision-making and companionship in marriage were
32 protective against death among women. However, none of the measures of marital
33 adjustment in that study were associated with mortality among men (Hibbard & Pope,
34 1993). Similarly, in a study of patients with congestive heart failure, marital adjustment
35 predicted 8-year survival more strongly for women than for men (Rohrbaugh et al.,
36 2006).

37 Relatively fewer studies have examined the effects of marital adjustment on physiology.
38 The evidence from these studies suggests that those who report being in more satisfying
39 marriages have healthier physiological profiles. For example, in a naturalistic study of
40 healthy married couples, those in satisfying marriages showed lower ambulatory blood
41 pressure compared to those in less satisfying marriages (Holt-Lunstad, Birmingham, &
42 Jones, 2008). Links with immune functioning have also been demonstrated. In a sample
43 of healthy married women, those in satisfying marriages had better cellular immune
44 responses to latent Epstein–Barr virus and greater proliferative response of lymphocytes to
45 antigens *in vitro* (Kiecolt-Glaser et al., 1987).

46 Several recent studies have investigated associations between marital adjustment and
47 diurnal cortisol (Adam & Gunnar, 2001; Ditzen, Hoppmann, & Klumb, 2008; Saxbe,
48 Repetti, & Nishina, 2008; Slatcher, Robles, Repetti, & Fellows, 2009). Flattened diurnal
49 cortisol cycles are associated with deleterious health consequences (Sephton, Sapolsky,

1 Kraemer, & Spiegel, 2000) and may be a sign of allostatic load or poor adaptation to
 2 everyday stress (McEwen, 1998). Women especially show associations between marital
 3 adjustment and diurnal cortisol in everyday life. Naturalistic studies have found, for exam-
 4 ple, that among women but not men, marital adjustment is significantly associated with a
 5 stronger basal cortisol cycle, with higher morning values and a steeper decline across the
 6 day (Saxbe et al., 2008; Slatcher et al., 2009).

8 *Evidence for stress-buffering effects*

10 Although most early studies focused on main effects of marriage on health, several recent
 11 studies have examined the stress-buffering or moderating effect of marital functioning on
 12 the links between outside stressors and health. Some of this work has focused on chronic
 13 stress, while other studies have focused on daily and even momentary stressors. The find-
 14 ings from these studies suggest that main effects and stress-buffering effects of marriage on
 15 health may occur in tandem.

16 High quality marriages buffer the effects of stress on morbidity and mortality. In a
 17 study of 10 000 Israeli men over the age of 40, spousal love and support moderated the
 18 effect of stress on future angina (Medalie & Goldbourt, 1976). Marital quality reduces the
 19 effects of stress on health for women as well. In a prospective study of 15 348 Finnish
 20 employees, women who reported high levels of both work conflicts and marital conflicts
 21 had a 2.54 risk ratio of becoming disabled, whereas neither work conflict nor marital
 22 conflict by themselves were risk factors for disability (Appelberg, Romanov, Heikkila,
 23 Honkasaol, & Koskenvuo, 1996). In a prospective study of female cardiac patients, coro-
 24 nary artery changes actually regressed among those who were free of stress from either
 25 family or work life, with mean coronary luminal diameter increasing by 0.22 mm com-
 26 pared with women who experienced stress from both sources, whose luminal diameter
 27 decreased by 0.20 mm (Wang et al., 2007).

28 Well-functioning marriages buffer the effects of stress on physiology. For example, in a
 29 12-week daily diary study of married women with rheumatoid arthritis, significant eleva-
 30 tions in total T-cell activation and soluble IL-2 receptor occurred during high-stress
 31 weeks, but only for women reporting low levels of marital satisfaction. Multiple naturalis-
 32 tic studies have demonstrated the stress-buffering effects of marital quality on diurnal cor-
 33 tisol. Among married working mothers, those in happy marriages recover more quickly
 34 from workday stress than women in unhappy marriages (Saxbe et al., 2008). Similarly,
 35 daily levels of intimacy moderate the effects of chronic problems at work on daily cortisol
 36 levels (Ditzen et al., 2008). Little is known about the specific elements of marital quality
 37 that may moderate the effects of psychological states on physiology, but one possible can-
 38 didate is marital disclosure – the extent to which people open up to their spouses about
 39 their thoughts and feelings. A recent study demonstrated that wives lower in marital dis-
 40 closure were more physiologically reactive to their worries about work when at home
 41 compared to wives reporting high marital disclosure (Slatcher et al., 2009).

42 Can marriage help prevent stressful events as well as buffer them? Renewed attention
 43 is being given to the *stress prevention* models of social support developed in the 1970s and
 44 1980s, which describe how social support can reduce the possibility of stressful events
 45 happening (e.g., stress exposure) (Barrera, 1986; Dean & Lin, 1977; Gore, 1978). This
 46 theory suggests that marriage – in addition to its stress-buffering effects – may help people
 47 avoid stressful situations in the first place, thus conferring additional health benefits. Lon-
 48 gitudinal studies examining the effects of marital functioning on stressful life events over
 49 time are needed to test this idea directly.

Summary of Findings

Over the past three decades, the number of published studies investigating the links between marriage and health has steadily increased. The findings from these studies demonstrate that the quality of people's marital relationships is linked to cardiovascular functioning, neuroendocrine output, immunity, and health outcomes including morbidity and mortality. Whether measured via self-reports of marital quality or via observations of marital interactions in the laboratory, the current evidence suggests that marital functioning has important implications for both short-term and long-term health.

This review covered studies testing main and moderating effects of positive marital dimensions (marital strength) and negative marital dimensions (marital strain). Data from naturalistic and laboratory-based studies support the idea that both positive and negative dimensions of marriage are associated with health. Marital relationships can negatively affect health through the strain caused by negative spousal behaviors and beneficially affect health through positive ones. Further, being in happy marriage can protect against the negative effects of outside stressors on health, while being in an unhappy marriage can amplify the effects of stress.

Moving Forward: Integrating Advances in Basic Relationship Science into Studies of Marriage and Health

The study of marriage and health is a highly interdisciplinary endeavor, bringing together experts in marital processes, medicine, statistics, and physiology. A number of important recent advances have been made with regard to the physiological processes underlying marriage–health links (for excellent reviews on this topic, see Miller, et al., 2009 and Robles & Kiecolt-Glaser, 2003). However, while we have made great headway in identifying biological mechanisms through which marriage is linked to health, comparatively little is known about the *psychological* mechanisms underlying the links between marriage and health. We know that those in marriages characterized by high levels of satisfaction, frequent positive behaviors and infrequent negative behaviors tend to be healthier than those in unsatisfying marriages and marriages low in positive behaviors or high in negative behaviors. But less is known about the specific marital behaviors – particularly positive ones – that are linked to health. What are the behaviors that we should consider when examining links to health?

Much can be gained in this regard from basic relationship science conducted by social and personality psychologists. Relationship science has grown dramatically, with hundreds of studies investigating basic processes underlying relationship quality and stability. However, rarely do those conducting basic relationship science also investigate links to health. Fostering stronger and more frequent collaboration with basic relationship scientists is essential to understand the psychological processes through which marriage influences health. Until roughly 10 years ago, there was widespread belief that conflict was where all the 'action' is in relationships. Since then, there has been a seismic shift in the world of relationship research, not only toward studies of nonconflict interactions in the laboratory, but also toward more 'real world' studies of how relationship processes unfold in everyday life (Bolger, Davis, & Rafaeli, 2003; Reis & Gable, 2003). These studies have focused on how people think, feel, and behave in their close relationships – but not links to health per se. However, many of these basic relationship processes – if not most – have potential relevance for health. Below, I review a few key recent findings from relationship science that may advance our understanding of the links between marriage and health.

Intimacy processes: self-disclosure and partner responsiveness

A large body of experimental evidence has shown that disclosing one's thoughts and feelings through expressive writing is beneficial for physical health (Derlega, Metts, Petronio, & Margulis, 1993; Frattaroli, 2006; Pennebaker & Beall, 1986; Slatcher & Pennebaker, 2004; Stanton et al., 2000). The findings from these studies indicate that actively holding back thoughts, emotions, or behaviors can exacerbate a number of adverse biological processes, such as increased cortisol production and immune suppression (Traue & Deighton, 1990). These findings suggest that more normative disclosures that occur in everyday life – such as everyday disclosures to one's spouse – may yield health benefits as well.

There has been growing interest in the role of self-disclosure in daily life, particularly in the context of close relationships. For example, expressive writing is linked to positive changes in the ways that couples communicate in everyday life and, in turn, to greater relationship stability (Slatcher & Pennebaker, 2006). Further, higher levels of self-disclosure in close relationships are associated with increased intimacy in those relationships (Laurenceau, Barrett, & Pietromonaco, 1998; Laurenceau et al., 2005; Manne et al., 2004; Slatcher, in press). However, the effects of self-disclosure in the context of close relationships – which typically afford the most opportunities for self-disclosure – on stress physiology or health outcomes are largely unknown.

Findings from a recent study (Slatcher et al., 2009) suggest that self-disclosure in marriage may have health benefits – particularly for women. Women who reported disclosing more of their thoughts and feelings with their husbands showed 'healthier' diurnal cortisol rhythms with higher early morning cortisol and a steeper cortisol decline over the day. Given that flattened diurnal cycles may be associated with deleterious health consequences (Sephton et al., 2000) and may be a sign of allostatic load or poor adaptation to everyday stress, these results are notable and suggest potential pathways through which marriage may influence physical health. Independent of the effects of disclosure on diurnal cortisol were the moderating effects of marital disclosure on the links between momentary work worries and cortisol among women: women who reported low levels of marital disclosure showed a much stronger association between work worries and cortisol than those who were highly disclosing. Thus, women who were more disclosing to their husbands appeared to be less physiologically reactive to work worries and had a diurnal profile that has been associated with better health. These findings suggest that, for women at least, the positive effects of a happy marriage on HPA activity (Saxbe et al., 2008) may be partially explained by the extent to which they are able to be open and expressive about their thoughts and feelings with their spouses.

Spouses' responsiveness to disclosure may impact health as well. According to interpersonal process model of intimacy (Reis & Shaver, 1988), feeling understood, validated, and cared for by one's partner following self-disclosure (particularly emotional disclosure) – termed *perceived partner responsiveness* – is critical to relationship success. Mounting evidence suggests that perceived partner responsiveness is linked to greater intimacy and satisfaction in relationships, including when spouses are coping with breast cancer (Manne et al., 2004), when partners share positive events with each other (Gable, Gonzaga, & Strachman, 2006), and when they discuss their personal goals (Feeney, 2004).

Evidence from pain research and physiological laboratory studies suggests that partner responsiveness is relevant for health. For example, among patients recovering from knee surgery, partner responsiveness during recovery was associated with fewer knee limitations 3 months later. In a sample of newlyweds couples, supportiveness during marital conflicts contributed to greater declines in ACTH and cortisol in wives (Robles et al., 2006).

1 Among older couples, greater satisfaction with spousal social support predicted smaller
 2 cortisol responses and lower blood pressure in reaction to marital conflict (Heffner et al.,
 3 2004). These studies provide indirect evidence of the importance of partner responsiveness
 4 for health; however, the direct health effects of partner responsiveness are not yet known.
 5

6 *Commitment*

7
 8 The marriage and health literature has tended to place undue emphasis on satisfaction and
 9 adjustment. A central question addressed by relationship scientists has been how and why
 10 individuals remain involved in relationships that are deeply unsatisfying, which are known
 11 to have negative health consequences. One of the keys to answering this question is rela-
 12 tionship commitment. While satisfaction refers to the degree to which a person favorably
 13 evaluates a relationship, commitment refers to the degree to which a person intends to
 14 maintain a relationship, feels psychologically attached to it, and sustains a long-term ori-
 15 entation to it (Rusbult & Martz, 1995).

16 Commitment helps to explain why people who are in deeply unsatisfying relationships
 17 choose to stay in them, particularly for those in long-term marriages. A person may want
 18 to leave a marriage but feel that he or she cannot out of fear of abandoning children,
 19 losing one's home, or losing friends. Commitment – above and beyond satisfaction – is
 20 powerful predictor of whether people will stay or leave their partners (Drigotas & Rusbult,
 21 1992; Impett, Beals, & Peplau, 2001; Rusbult, Martz, & Agnew, 1998), and forgive
 22 their partners following a betrayal (Finkel, Rusbult, Kumashiro, & Hannon, 2002). It is
 23 probable that the long-term health prospects for those in dissatisfied but committed mar-
 24 riages are quite different than for those in dissatisfied but uncommitted ones. For exam-
 25 ple, if a person is very unhappy in their marriage and uncommitted to it – with multiple
 26 relationship alternatives, no children, and few investment barriers to leaving – they are
 27 more likely to exit that relationship (Rusbult, Zembrodt, & Gunn, 1982). The reduction
 28 in stress following exit from such a relationship would be expected to result in improved
 29 health outcomes – particularly among those who end up remarrying (Sbarra & Nietert,
 30 2009). However, unhappily married individuals who are deeply committed to staying
 31 with their spouse may be under particularly high levels of stress for an extended period of
 32 time, especially those not actively working to improve their marriage through therapy or
 33 other constructive approaches. Such stress, in turn, would probably be associated with
 34 poor health outcomes.
 35

36 *Taking into account the dyadic nature of relationships – The Actor-Partner Interdependence Model*

37
 38 Most studies of marriage and health have tended to consider the impact of one spouse's
 39 thoughts and behaviors without considering the other's (for notable exceptions, see Heffner
 40 et al., 2006; Klumb, Hoppmann, & Staats, 2006; Smith et al., 2007). A characteristic of
 41 marital data is that the data from two couple members are not independent. For example,
 42 people who are satisfied in their marriage tend to have spouses who also are satisfied; peo-
 43 ple who are optimistic tend to have optimistic romantic partners, and so on. To account
 44 for this nonindependence in statistical analyses, relationship researchers in recent years often
 45 have framed their analyses in the Actor-Partner Interdependence Model (APIM; Kashy &
 46 Kenny, 2000; Kenny, 1996). The APIM is a technique designed to address nonindepend- **6, 7**
 47 ence in dyadic analysis. This technique can allow researchers to estimate, for example, the
 48 influence of one person's behavior (e.g., expressions of positive affect) on her own health
 49 outcome (e.g., cardiovascular disease) – termed *actor* effects – as well as the effects of her

behavior on her partner's health outcome – *partner* effects. Furthermore, APIM can be used for testing for mediation and moderation (Campbell & Kashy, 2002). 8

Marriage and health studies that have incorporated APIM analyses have been fruitful. For example, greater work hours have been shown to be positively associated with one's own and one's spouse's cortisol levels (Klumb et al., 2006). Another study showed that one's own – but not spouses' – perceptions of demand/withdraw patterns are associated with changes in cortisol following a laboratory conflict (Heffner et al., 2006). As new studies untangle the ways in which couple members affect each other's health, the theoretical model presented here may be refined to highlight the specific dyadic processes underlying marriage–health links.

Conclusion

Marital functioning has a powerful impact on health. Current evidence demonstrates that marital strain and marital strength impact physiology, cardiovascular disease, and mortality and that marital quality can buffer the health effects of outside stressors. With rapidly advancing technology, statistical and biological methods, and theory, this is a particularly exciting time for marriage and health research. Perhaps most exciting is how much there is to be discovered about the interpersonal processes linking marital functioning to health. Social and personality psychologists are well positioned to make important contributions to this field. It has already been shown that many of the same processes that are linked to dissatisfaction and divorce – demand/withdraw patterns and hostility, for instance – are also linked to physiology and health. Undoubtedly, many other processes linked to relationship quality and stability under investigation by social and personality psychologists – such as those described here – have implications for health as well.

Short Biography

Richard Slatcher uses experimental and naturalistic methods to investigate close relationship processes and their impact on physical health. His research has demonstrated that self-disclosure in the context of dating and marital relationships is linked to satisfaction and stability in those relationships as well as a reduction in the impact of life events and daily hassles on stress physiology. Slatcher's work has been published in leading journals, including *Psychological Science*, *Science*, *Personal Relationships*, and the *Journal of Research in Personality*. He received a BS in Business Administration from the University of Richmond, a PhD in Social and Personality Psychology from the University of Texas at Austin, and was an NIMH postdoctoral fellow in Health Psychology at the University of California, Los Angeles. He is currently an Assistant Professor in the Department of Psychology at Wayne State University.

Endnote

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