

## Chapter Nineteen

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# Forgiveness, Unforgiveness, Health, and Disease

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Five years ago, we observed that no evidence existed from controlled studies linking forgiveness to physiology, health, or disease (Thoresen, Harris, & Luskin, 2000). Since then, the theory, measurement, and empirical study of forgiveness have developed substantially. Evidence has been produced linking both forgiveness and unforgiveness to short-term physiological variables, such as cortisol reactivity (Berry & Worthington, 2001), blood pressure, and skin conductance (Lawler et al., 2003; Witvliet, Ludwig, & Vander Laan, 2001). Coupled with the related literature on stress and health, this evidence makes hypotheses directly linking unforgiveness and forgiveness with health and disease variables more plausible and ripe to be tested. However, direct evidence that forgiveness or unforgiveness are related to health or disease is still virtually nonexistent (cf. Toussaint, Williams, Musick, & Everson, 2001). We write this chapter with hopes of inspiring researchers to address this clinically-relevant gap in our knowledge.

We review hypotheses and theoretical models linking forgiveness and unforgiveness to health and disease, and we present supporting evidence where available. Because evidence supporting these models is generally indirect and/or limited, we focus on specifying the research and evidence that might further our understanding of hypothesized associations between forgiveness and unforgiveness, and health and disease.

### PERSONAL ASSUMPTIONS ABOUT FORGIVENESS

*Unforgiveness* has been defined by Worthington and colleagues (Worthington, Sandage, & Berry, 2000; Worthington & Wade, 1999) as a combination of delayed negative emotions (i.e., resentment, bitterness, hostility, hatred, anger, and fear) toward a transgressor. We view unforgiveness essentially as stress response (see also Worthington & Scherer, 2004) with potential health consequences. Unforgiveness is distinct from the immediate emotional response to a perceived injustice. It can be viewed as getting

stuck in negative emotions and a hyperaroused stress response through rumination. Not everyone who experiences an offense experiences unforgiveness. Forgiveness can be seen as one of many ways to reduce or avoid unforgiveness (Worthington, 2001). As such, the hypothesized health benefits of reducing unforgiveness and fostering forgiveness are not necessarily synonymous. We view forgiveness not only as the reduction of unforgiveness through reducing the negative thoughts, emotions, motivations, and behaviors toward the offender but also as the increase of positive emotions and perspectives, such as empathy, hope, or compassion. Although the health benefits of forgiveness should include the health benefits of unforgiveness reduction, there may be additional health benefits associated with the increase of positive states. Furthermore, it may be possible to reduce unforgiveness and reap the hypothesized health benefits without forgiving. We elaborate on these notions below.

## REVIEW OF THE THEORETICAL AND EMPIRICAL LITERATURE

We consider three general hypotheses that are relevant to the notion that forgiveness and unforgiveness may be related to physical health and disease: (a) Unforgiveness is associated with health risks; (b) positive states that are characteristic of forgiveness have health benefits beyond those associated with the reduction of unforgiveness; and (c) forgiveness interventions produce changes in health and disease outcomes when evaluated with randomized trials. Here we unpack these broad and multidimensional hypotheses, review relevant evidence, and discuss the nature of future research that might help us understand under what conditions each hypothesis may hold.

### Hypothesis 1: Unforgiveness Is Associated with Health Risks

There are physiological, psychological, behavioral, and social paths through which unforgiveness may impact health. Again, unforgiveness does not refer to the immediate transgression-related experience of negative emotions but rather the delayed experience of resentment, blame, bitterness, hostility, hatred, anger, and fear that may be fostered through rumination. No direct evidence exists that either situational or dispositional unforgiveness is related to long-term health or disease. The lack of direct evidence is not surprising, given that the notion of unforgiveness and the means to measure it are fairly recent developments. In fact, no detailed, multidimensional measure of unforgiveness has yet been developed. An exception is the Transgression-Related Interpersonal Motivations Inventory (TRIM; McCullough et al., 1998) that is limited to the state-assessment of avoidance and revenge. Even so, three lines of evidence exist—stated here as propositions—suggesting unforgiveness may be related to health.

**Unforgiveness Causes Health Problems in a Manner Similar to Other Chronic Stress Responses.** Unforgiveness has been framed as a stress reaction (Worthington & Scherer, 2004). The negative health consequences of chronic stress and the physiological

wear and tear of a hyperaroused stress response have been observed in traumatized populations and in people who have endured extreme and/or chronic stressors (e.g., Schnurr & Green, 2004). We hypothesized previously (Thoresen et al., 2000) that the rumination-fueled, chronic experience of the stress and negative emotions that constitute unforgiveness may detrimentally impact health through the pathways of chronic sympathetic nervous system hyperarousal and increased allostatic load (McEwen, 1998, 2003). The argument rests on the assumption that transgressions are like other health-endangering stressors and that unforgiveness produces a similar, chronically hyperaroused stress response. Given the substantial evidence that extreme and chronic stressors negatively impact health (see McEwen, 2002) and further that unforgiveness has been conceptualized as a stress response to a significant stressor, the notion that unforgiveness is linked to health risks is a small leap. Yet the devil may be in the details.

In the short term, unforgiveness has been shown to produce intense negative emotions as well as physiological responses consistent with other stress responses (Witvliet, Ludwig, & Bauer, 2002; Witvliet et al., 2001). Yet outside the lab and over longer periods of time, it is unknown to what extent unforgiveness is like stress responses to extreme stressors for which links to health outcomes have been established. Seybold, Hill, Neumann, and Chi (2001) found some evidence that the blood chemistries of people who are chronically unforgiving are similar to that of people under stress; however, there were many markers for which similarities were not found. We simply do not know whether the physiology, cognition, behavior, and social functioning of the unjustly fired worker or wife of an unfaithful husband, for example, are similar to those of people living in extreme poverty or refugee camps, traumatized combat veterans, or rape survivors. How is interpersonal unforgiveness different from and similar to trauma in terms of physiological, social, and health consequences? The natural history of unforgiveness (i.e., its frequency, intensity, and duration) for specific people in specific contexts is largely unknown.

Knowledge concerning the natural history of unforgiveness is currently a major missing link in the evidentiary chain. For example, it is unknown to what extent the attentional resources of the unforgiving person are devoted to the transgression or at what point rumination becomes problematic. Intuitively, unforgiveness may be characterized by range (i.e., the number of people or situations for which one is unforgiving), frequency (i.e., how often one is actively experiencing a state of unforgiveness), duration (i.e., how long each episode of unforgiveness lasts), and intensity (i.e., the magnitude of the emotional/behavioral stress response). Research that characterizes individuals on these unforgiveness domains and examines the long-term health trajectories of various patterns of unforgiveness would be extremely enlightening. Research such as this would also let us know how much unforgiveness is like other stress responses for which links to health and illness exist. Knowing more about the lived experience of unforgiveness will allow us to understand better its nature and prevalence, and to study its health-related consequences. Long-term studies with frequent assessments, posttransgression physiological monitoring, and disentangling of

the health consequences of severe unforgiveness and trauma are important steps to furthering our knowledge in this area.

**Unforgiveness is Defined as the Experience of Emotions Already Linked to Health Risks.** The core components of unforgiveness (e.g., anger, hostility, blame, fear) have been associated with health and disease outcomes. It is a short and tempting leap to claim that the health risks associated with the components of unforgiveness apply directly to unforgiveness. Yet again, the devil may be in the details.

The research linking anger and hostility to health, disease, and mortality are extremely nuanced. *Anger* has been defined as an emotional response to a perceived mistreatment that may range in intensity from irritation to rage, and *hostility* as a set of negative attitudes, beliefs, and appraisals concerning others as likely sources of frustration, mistreatment, and provocation (Smith, 1992). The manner in which anger is experienced, responded to, and expressed, how long one stays angry and takes to recover from it, as well as characteristics of the person (e.g., gender) appear to greatly influence the links to health and disease outcomes. As an example of the nuanced and qualified nature of the anger/health association, Hogan and Linden (2004) examined the health consequences of six independent anger-response styles—aggression, assertion, social support seeking, diffusion, avoidance, and rumination—in a sample of 159 hypertensive patients. Although the anger styles were not found to influence resting and ambulatory blood pressure levels, rumination had a detrimental influence on the relation between avoidance and assertion on blood pressure. The moderator effect of rumination also differed by gender.

There is also the possibility that some forms of anger may actually improve health (Davidson, MacGregor, Stuhr, Dixon, & MacLean, 2000) and reduce unforgiveness. Davidson and colleagues have distinguished between constructive anger and destructive anger. Constructive anger may involve engaging in instrumental thoughts and actions geared toward rectifying the situation, cognitive restructuring, and interpersonal problem solving. Destructive anger involves rage, revenge, and hostile rumination and imagery. In this framework, anger may be a positive or negative motivating force.

Clearly, it is an oversimplification to follow this form of logic: Anger is a component of unforgiveness; anger is a health risk; therefore, unforgiveness is a health risk. The multidimensional assessment of anger and perhaps of angry rumination should be routinely included in forgiveness and unforgiveness research. Knowing more about the nature and course of anger expression in the context of unforgiveness will further our understanding of the potential health effects of unforgiveness.

Similar issues exist in claiming negative health consequences of unforgiveness based on the link between hostility and disease. For example, Julkunen, Salonen, Kaplan, and Chesney. (1994) prospectively studied the link between hostility and anger suppression to the progression of carotid atherosclerosis in a sample of Finnish men ( $N = 119$ ; mean age 54 years). They found a twofold accelerated progression of carotid atherosclerosis in people with high cynical distrust and high anger control, even after controlling for biological and demographic risk factors. Also, there was evidence that

the cognitive component of hostility is a more important risk factor for the progression of carotid atherosclerosis than is the affective component. For our purposes, we emphasize here that not all unforgiveness has hostility as a component, nor does all hostility equally endanger health.

It is also important to consider models other than main-effects models that might link unforgiveness to health. Underlying personality characteristics or long-standing psychosocial patterns, such as hostility or suspiciousness, may make one more likely to experience both unforgiveness and negative health consequences (Eysenck, 2000). A mediational model might link personality characteristics to health consequences through the path of unforgiveness.

Less evidence exists that other components of unforgiveness, such as blame and hatred, affect health. Affleck, Tennen, Croog, and Levine (1987) found blaming others for an initial heart attack was predictive of reinfarctions. It is plausible that the physiological arousal associated with chronic experiencing of hatred or blame might endanger health. As with anger, the nature, intensity, frequency, and duration of these experiences in the context of unforgiveness is unknown and would most likely moderate the subsequent impact on health. Again, it would be useful to document the natural history of these components of unforgiveness, especially the ongoing cognitive features, so that we might better understand the associated health risks as well as the impact of reducing unforgiveness and promoting forgiveness. To establish that unforgiveness is a health risk, the construct needs more precise definition and measurement, as well as research specifically dedicated to examining its influence on health.

**The Behaviors Associated with Unforgiveness May Cause Health Problems.** Until now, we have implicitly assumed that the mechanisms through which unforgiveness might endanger health primarily involve the intense and chronic experience of its component emotions, resulting in autonomic nervous system hyperarousal and the general wear and tear associated with increased allostatic load. Other mechanisms are plausible. For example, resentment, anger, or hatred could lead to violent revenge or retaliation. Although there may be specific situations when revenge actually makes one safer, we generally assume that engaging in violent retribution leads to poor health, social, and legal outcomes. Furthermore, unforgiveness might be linked to poor health through the consequences of problematic coping styles, such as avoidance coping or substance use.

In addition, the emotional components of unforgiveness may lead directly or indirectly to social isolation, which has been linked to health risks (e.g., Cohen, Gottlieb, & Underwood, 2000). At least two processes might implicate unforgiveness in the erosion of social networks and support. First, the unforgiving person, who may be angry, hostile, ruminating, and attached to his or her victim role, may have friends and acquaintances who tire of attending to the person's misery. Second, the dispositionally unforgiving person, untrusting of people and fearful of revictimization, may avoid social contact or may limit the extent to which he or she allows himself or herself to be vulnerable in relationships. If unforgiveness reduces social contact, support, and

integration by these or other mechanisms, the health benefits of these contacts will be lost. It is also important to note that not all social contact is health promoting. In some cases, the anger or fear associated with unforgiveness might motivate healthy changes or reductions in unhealthy social contact.

Currently, no direct evidence exists linking interpersonal transgressions to changes in health-related behavior through the path of unforgiveness. Clearly, this is an important area of future research and is a core aspect of documenting the natural history of unforgiveness.

**Conclusions Regarding Hypothesis 1.** One way of proceeding is to show that transgressions are like other extreme or chronic stressors for which links to health have been established. More directly, it would be useful to characterize the physiological, psychological, and social course of unforgiveness across time and to examine possible links of person, course, and context factors to hypothesized health outcomes. We currently have no reliable means to distinguish between the prolonged initial reactions to a transgression from the beginnings of unforgiveness. Nor do we know at what point, in terms of chronicity and intensity, unforgiveness may endanger health. More detailed, multidimensional, and time-structured means of assessing unforgiveness would be helpful.

### **Hypothesis 2: Forgiveness Has Health Benefits Beyond Those Linked to Reduced Unforgiveness**

Toussaint et al. (2001) examined a national probability sample of 1,423 respondents and found relationships between forgiveness of others and self-reports of mental and physical health that varied by age. Specifically, forgiveness of others was more strongly related to self-reported mental and physical health for middle-aged and elderly adults than for young adults. Although intriguing, the cross-sectional nature of these data makes claims regarding underlying mechanisms and causal relationships speculative.

Forgiveness, as noted, is commonly defined as a reduction of unforgiveness plus an increase of positive states, such as empathy, compassion, or hope. At issue here is whether these positive states add health benefits beyond those that may be associated with unforgiveness reduction. First, we discuss the possible mechanisms through which positive affect might be generally linked to better health. Then we examine the evidence that positive states cause better health. Finally, we discuss evidence that forgiveness involves the affective experiences for which health consequences have been implicated.

**Mechanisms Thought Which Positive Affect May Benefit Health.** Salovey, Rothman, Detweiler, and Steward (2000) argue that positive affect may influence health through several different paths: "(a) direct effects of positive affect on physiology, especially the immune system, (b) the information value of emotional experiences, (c) the

psychological resources engendered by positive feeling states, (d) the ways in which mood can motivate health-relevant behaviors, and (e) the elicitation of social support” (p. 110). Fredrickson (1998) theorized that positive emotions serve to broaden one’s momentary thought-action repertoire, which in turn has the effect of building physical, intellectual, and social resources. The majority of the explanatory models implied by these authors posit mediators, such as increased health-related behaviors or social integration, as critical to the production of health affects. Here we highlight examples of research that bear on these notions.

**Evidence That Positive Affect Impacts Health.** Fredrickson and Levenson (1998) found that certain positive emotions speed recovery from the cardiovascular sequelae of negative emotions in the laboratory setting. Many studies have been conducted examining associations between both positive affect and negative affect with blood markers of immune functioning, especially secretory immunoglobulin A. The results have been mixed (e.g., Futterman, Kemeny, Shapiro, & Fahey, 1994) but generally support the idea that positive affect enhances and negative affect compromises immune functioning (e.g., Labott, Ahleman, Wolever, & Martin, 1990). As mentioned previously, evidence has linked forgiveness-related positive emotions to blood pressure and skin conductance (Lawler et al., 2003; Witvliet et al., 2001).

Much less is known about the health (not just transient physiological reactions) and long-term consequences of acute or habitual experiences of positive affect. Some epidemiological evidence exists documenting a prospective association between positive affect and important long-term health outcomes, including mortality (e.g., Moskowitz, 2003). The links between health outcomes and personality characteristics, such as optimism or hostility, may be mediated by the effects of positive and negative emotions. Many gaps exist in our knowledge regarding the associations between positive affect and health, particularly the nature, frequency, duration, and intensity of positive affect required to influence health risks.

Even if we knew that forgiveness-related positive affect was salubrious in certain “doses,” we really do not know the emotion-related natural history of forgiveness. We define people as forgiving if they increase in positive states, but it is unknown whether these positive states are of an adequate frequency and intensity to influence health. We suspect that a main-effect model (e.g., forgiveness-related compassion produces positive health outcome) is unlikely to find support. More likely, increases in forgiveness-related positive affect might influence health through more indirect means, such as most of the mechanisms proposed by Salovey et al. (2000) and Fredrickson (1998). Currently, research documenting the experience of forgiveness-related affect is limited by crude instrumentation and infrequent and short-term assessment. Research that tests models linking forgiveness-related affect to health outcomes through mediators such as health behaviors or increased social networks could dramatically advance the field.

**Conclusion Regarding Hypothesis 2.** The nature and extent of positive states related to forgiveness remain unclear. More detailed assessment of the natural history of

forgiveness-related positive states are needed before we can adequately test claims regarding the health benefits of forgiveness beyond the reduction of unforgiveness. Testing both the main and mediated effects of forgiveness—beyond those associated with unforgiveness reduction—on health and disease will increase our knowledge greatly.

### **Hypothesis 3: Forgiveness Interventions Have Produced Changes in Health and Disease Outcomes When Evaluated in Randomized Trials**

Ideally, forgiveness intervention studies would assess multiple dimensions of forgiveness, unforgiveness, and important health-related variables on frequent occasions for extended periods of time. Furthermore, not only would the main effects of the intervention on these outcomes be explored, but the extent that intervention-related health effects are mediated by unforgiveness reduction and/or increases in forgiveness-related positive affect would be examined. In addition, forgiveness-intervention studies could be conducted with patient samples to observe the effects of forgiveness training on medical course and status. These ideals have not been realized in the published literature, but one dissertation study represents a step in the right direction (Waltman, 2003).

Waltman (2003) examined the psychological and physiological effects of a 10-week forgiveness program with male coronary artery disease patients. Participants were randomized either to an individual forgiveness intervention based on Enright's process model of forgiveness ( $n = 13$ ) or to an individual 10-week support program discussing the impact of heart disease on various aspects of life ( $n = 12$ ). Measures of forgiveness, anger, anxiety, and hope, as well as measures of myocardial perfusion, heart rate, and blood pressure, were taken for 17 participants at pretest, posttest, and 10-week follow-up. Participants also underwent nuclear heart scans at the same measurement points after an anger recall task. Participants in the forgiveness condition significantly improved on measures of forgiveness, state anger, and anger reaction from pretest to posttest but only on forgiveness from pretest to follow-up, in comparison with the support participants. No significant differences on physiological measures were observed between groups from pretest to posttest, but from pretest to follow-up, significant differences in reductions of anger-induced myocardial perfusion defects were found in favor of the forgiveness condition. If this study used a larger sample size, longer term of follow-up, and as a result were able to explore indirect effects, it would represent the kind of research capable of producing evidence directly linking forgiveness and health.

It is unusual but not completely unheard of for forgiveness intervention studies to measure fear, hostility, or anger—hypothesized to be core components of unforgiveness—or hope, compassion, or empathy—hypothesized to be core components of forgiveness. For example, Thoresen et al. (2001) reported significant treatment effects measured at 4 months after intervention for trait anger and perceived stress in an evaluation of a primarily cognitive behavioral forgiveness intervention consisting of

six once-weekly, 90-minute sessions conducted in small, same-sex groups. They also found the hypothesized effects on several dimensions of forgiveness (increased positive, reduced negative). Unfortunately, as with virtually all intervention trials to date, no direct or longer term assessments measured important health or disease indicators. Hopefully, future intervention studies will address these issues.

## NEW RESEARCH DIRECTIONS NEEDED IN THE AREA

### Construct Refinement and Measurement

The advancement of forgiveness research depends on further refining relevant constructs and improving the means of assessing them. For example, different authors have enumerated the components of unforgiveness and forgiveness-related affect differently. Definitions of forgiveness vary, as does the parsing of types of forgiveness. Furthermore, no current assessment instrument or method captures the full complexity of these constructs. Even among the most established and multidimensional instruments, such as the Enright Forgiveness Inventory, assessment of negative and positive affect is kept at the general level. It is possible that several types of unforgiveness exist (e.g., angry, depressed, passive) that may have different effects on health or may operate via different pathways. Worthington and Scherer (2004) have distinguished between decisional and emotional forgiveness, a useful distinction that has yet to be incorporated into other forgiveness research. Because unforgiveness is defined as a delayed pattern of reactions, the time elapsed between the transgression and reaction should be, but has never been, a part of unforgiveness assessment. In other words, better understanding the nature as well as the extent of negative and positive states is important to the future of forgiveness research.

Many authors have lamented the almost exclusive reliance of self-report, questionnaire-based measures in the assessment of forgiveness constructs, typically administered to the offended party on very few occasions spanning short time periods. McCullough, Rachal, and Hoyt (2000) and Thompson and Synder (2003) elaborate further on improvements in forgiveness measurement that are needed. Use of performance-based measures and gathering information from other sources are among the possible advances.

### Indirect Models

As Witvliet (2001) noted, there are most likely a host of person factors that influence the nature of offense that is taken from a given interpersonal stimulus, the likelihood of developing unforgiveness, as well as the nature and magnitude of the link between unforgiveness, forgiveness, health, and disease. The exploration of moderator variables, such as ethnicity, educational level, income level, and personality style, within

both longitudinal-observational studies and intervention studies will greatly advance our knowledge of the natural history of both unforgiveness and forgiveness. In addition, as noted, mediational models of various forms should be tested (e.g., unforgiveness → substance use → illness, or optimism → forgiveness-related positive affect → health outcome).

### Long-Term Longitudinal Studies

Most disease and health processes unfold over time periods that exceed the typical follow-up of forgiveness studies. Long-term longitudinal studies with frequent assessments could help clarify the typical course of harmful physiological states related to unforgiveness. The long-term health risks associated with dispositional unforgiveness need to be documented. The potentially bidirectional, if not multidirectional, nature of the illness-unforgiveness relationship should be explored. The unique health effects of unforgiveness reduction and forgiveness need to be clarified. The long-term health impacts of forgiveness interventions should be tracked. The logistical and financial burdens of such studies are great, but so might be the rewards.

## RELEVANCE FOR CLINICAL AND APPLIED INTERVENTIONS

We have stated here that although models exist positing plausible links from unforgiveness reduction and forgiveness-related positive states to health and disease, the current state of evidence is indirect and suggestive at best. Therefore, we make several recommendations and caveats regarding the clinical application of this literature. Clinicians and researchers should not overstate claims about nature of the forgiveness-health association.

1. Current theory and empirical evidence suggest that many paths exist to unforgiveness reduction besides forgiveness. We know little about the costs and benefits of these paths, and even less about interventions that might facilitate travel along them. Other means of unforgiveness reduction deserve more research attention.
2. Very little attention has been given to potential down sides of forgiveness. When might forgiveness be contraindicated, or what might be potential risks associated with it? Is there such a thing as “premature forgiveness?”
3. All interventions occur within a cultural context. The meaning and perceived value of forgiveness (or grudge holding) is largely culturally determined. What it means to say “I have forgiven” may vary on average by gender, religious affiliation, spiritual perspective, ethnicity, geographical location, or other characteristics. Forgiveness may be valued or denigrated, may be viewed as an important therapeutic goal or seen as making one weak or vulnerable. The multicultural meanings of forgiveness are poorly understood.

4. If unforgiveness reduction, especially through forgiveness, can be shown to reduce the risk of illness, then chronic unforgiveness might be assessed and treated in the primary care setting. A patient's tendency to be easily offended and grudge-harboring may also have implications for the patient-doctor relationship.

## PERSONAL THEORETICAL PERSPECTIVES ON THE FIELD

This chapter focuses on forgiveness and unforgiveness as proximal to health outcomes. However, given the prevailing proximal and causal perspective of almost all empirical studies, the more distal and indirect relationships linking forgiveness and health are sorely in need of study. Another important area of future forgiveness research and application is the recognition and treatment of unforgiveness that results from injury (including crimes, terrorism, and war) and disease (e.g., HIV/AIDS, hepatitis), as well as from interactions with the health care system (e.g., medical mistakes). Virtually ignored are models in which health and disease variables (e.g., pain, HIV, injuries from violent crimes or medical mistakes) are the kernel around which unforgiveness grows. For example, U.S. Institute of Medicine (2000) estimates that 44,000–98,000 Americans die each year because of medical errors, and many more are nonfatally injured and disabled. The potential is great for the development of unforgiveness in patients surviving medical mistakes, as well as in their families and friends, and for the development of self-unforgiveness in health care providers who are responsible for these events. The stress of unforgiveness in these contexts may exacerbate the already compromised health in surviving patients, may add additional burdens to family systems already under stress, and may impact the health and professional functioning of the responsible health care providers.

## CONCLUSIONS

The recent work linking unforgiveness and forgiveness to short-term physiological variables provides a basis from which we can reasonably hypothesize, yet not conclude, that chronic and intense unforgiveness are health risks. Almost no direct evidence has been produced that tests this hypothesis. Distinctions between reducing unforgiveness and promoting forgiveness and between state and dispositional unforgiveness are important theoretical developments that will allow researchers to posit and test hypotheses of specific forgiveness and health relationships. We believe the extensive stress-coping health literature provides a template for research in this area. More precise construct definition and measurement, more fine-grained and long-term assessment schedules, methodological pluralism (e.g., randomized trials, longitudinal observational studies, qualitative methods), and studying forgiveness within patient samples will greatly advance our understanding of links between unforgiveness, forgiveness, health, and disease.

## REFERENCES

- Affleck, G., Tennen, H., Croog, S., & Levine, S. (1987). Causal attribution, perceived benefits, and morbidity after a heart attack: An 8-year study. *Journal of Consulting and Clinical Psychology, 55*, 29–35.
- Berry, J. W., & Worthington, E. L., Jr. (2001). Forgivingness, relationship quality, stress while imagining relationship events, and physical and mental health. *Journal of Counseling Psychology, 48*, 447–455.
- Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). Social relationships and health. In S. Cohen, L. G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention* (pp. 3–28). New York: Oxford University Press.
- Davidson, K., MacGregor, M. W., Stuhr, J., Dixon, K., & MacLean, D. (2000). Constructive anger verbal behavior predicts blood pressure in a population-based sample. *Health Psychology, 19*, 55–64.
- Eysenck, H. J. (2000). Personality as a risk factor in cancer and coronary heart disease. In D. T. Kenny, & J. G. Carlson (Eds.), *Stress and health: Research and clinical applications* (pp. 291–318). Amsterdam, The Netherlands: Harwood Academic.
- Fredrickson, B. L. (1998). What good are positive emotions? Special issue: New directions in research on emotion. *Review of General Psychology, 2*, 300–319.
- Fredrickson, B. L., & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition and Emotion, 12*, 191–220.
- Futterman, A. D., Kemeny, M. E., Shapiro, D., & Fahey, J. L. (1994). Immunological and physiological changes associated with induced positive and negative mood. *Psychosomatic Medicine, 56*, 499–511.
- Hogan, B. E., & Linden, W. (2004). Anger response styles and blood pressure: At least don't ruminate about it! *Annals of Behavioral Medicine, 27*, 38–49.
- Julkunen, J., Salonen, R., Kaplan, G. A., & Chesney, M. A. (1994). Hostility and the progression of carotid atherosclerosis. *Psychosomatic Medicine, 56*, 519–525.
- Labott, S. M., Ahleman, S., Wolever, M. E., & Martin, R. B. (1990). The physiological and psychological effects of the expression and inhibition of emotion. *Behavioral Medicine, 16*, 182–189.
- Lawler, K. A., Younger, J. W., Piferi, R. L., Billington, E., Jobe, R., Edmondson, K., et al. (2003). A change of heart: Cardiovascular correlates of forgiveness in response to interpersonal conflict. *Journal of Behavioral Medicine, 26*, 373–393.
- McCullough, M. E., Hoyt, W. T., & Rachal, K. C. (2000). What we know (and need to know) about assessing forgiveness constructs. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: Theory, research, and practice* (pp. 65–88). New York: Guilford Press.
- McCullough, M. E., Rachal, K. C., Sandage, S. J., Worthington, E. L., Jr., Brown, S. W., & Hight, T. L. (1998). Interpersonal forgiving in close relationships: II. Theoretical elaboration and measurement. *Journal of Personality and Social Psychology, 75*, 1586–1603.
- McEwen, B. S. (1998). Protective and damaging effects of stress mediators. *New England Journal of Medicine, 338*, 171–179.
- McEwen, B. S. (2002). *The end of stress as we know it*. Washington, DC: Joseph Henry Press.
- McEwen, B. S. (2003). Mood disorders and allostatic load. *Biological Psychiatry, 54*, 200–207.
- Moskowitz, J. T. (2003). Positive affect predicts lower risk of AIDS mortality. *Psychosomatic Medicine, 65*, 620–626.

- Salovey, P., Rothman, A. J., Detweiler, J. B., & Steward, W. T. (2000). Emotional states and physical health. *American Psychologist*, *55*, 110–121.
- Schnurr, P. P., & Green, B. L. (Eds.). (2004). *Trauma and health: Physical health consequences of exposure to extreme stress*. Washington, DC: American Psychological Association.
- Seybold, K. S., Hill, P. C., Neumann, J. K., & Chi, D. S. (2001). Physiological and psychological correlates of forgiveness. *Journal of Psychology and Christianity*, *20*, 250–259.
- Smith, T. W. (1992). Hostility and health: Current status of a psychosomatic hypothesis. *Health Psychology*, *11*, 139–150.
- Thompson, L. Y., & Snyder, C. R. (2003). Measuring forgiveness. In S. J. Lopez, & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 301–312). Washington, DC: American Psychological Association.
- Thoresen, C. E., Harris, A. H. S., & Luskin, F. (2000). Forgiveness and health: An unanswered question. In M. E. McCullough, & K. I. Pargament (Eds.), *Forgiveness: Theory, research, and practice* (pp. 254–280). New York: Guilford Press.
- Thoresen, C. E., Luskin, F., Harris, A. H. S., Benisovich, S. V., Standard, S., Bruning, B., et al. (2001, March). *Effects of forgiveness intervention on perceived stress, state and trait anger, and self-reported health*. Paper presented at the annual meeting of the Society of Behavioral Medicine, Seattle, WA.
- Toussaint, L. L., Williams, D. R., Musick, M. A., & Everson, S. A. (2001). Forgiveness and health: Age differences in a U.S. probability sample. *Journal of Adult Development*, *8*, 249–257.
- U.S. Institute of Medicine Committee on Quality of Health Care in America (Eds.). (2000). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.
- Waltman, M. A. (2003). The psychological and physiological effects of forgiveness education in male patients with coronary artery disease. *Dissertation Abstracts International: Section B: The Sciences & Engineering*, *63*(8-B), 3971.
- Witvliet, C. v. O. (2001). Forgiveness and health: Review and reflections on a matter of faith, feelings, and physiology. *Journal of Psychology and Theology*, *29*, 212–224.
- Witvliet, C. v., Ludwig, T. E., & Bauer, D. J. (2002). Please forgive me: Transgressors' emotions and physiology during imagery of seeking forgiveness and victim responses. *Journal of Psychology and Christianity*, *21*, 219–233.
- Witvliet, C. v., Ludwig, T. E., & Vander Laan, K. L. (2001). Granting forgiveness or harboring grudges: Implications for emotion, physiology, and health. *Psychological Science*, *12*, 117–123.
- Worthington, E. L., Jr. (2001). Unforgiveness, forgiveness, and reconciliation in societies. In R. G. Helmick, & R. L. Petersen (Eds.), *Forgiveness and reconciliation: Religion, public policy, and conflict transformation* (pp. 161–182). Philadelphia: Templeton Foundation Press.
- Worthington, E. L., Jr., & Scherer, M. (2004). Forgiveness is an emotion-focused coping strategy that can reduce health risks and promote health resilience: Theory, review, and hypotheses. *Psychology and Health*, *19*, 385–405.
- Worthington, E. L., Sandage, S. J., & Berry, J. W. (2000). Group interventions to promote forgiveness: What researchers and clinicians ought to know. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: Theory, research, and practice* (pp. 228–253). New York: Guilford Press.
- Worthington, E. L. Jr., & Wade, N. G. (1999). The psychology of unforgiveness and forgiveness and implications for clinical practice. *Journal of Social and Clinical Psychology*, *18*, 385–418.

