

Chapter 3

A Conceptual Model of Forgiveness and Health

**Caroline R. Lavelock, Daniel J. Snipes, Brandon J. Griffin,
Everett L. Worthington, Jr., Don E. Davis, Joshua N. Hook, Eric G. Benotsch,
and James Ritter**

Forgiveness has been consistently linked with physical health outcomes, including objective measures of physical health such as physiological responsiveness and recovery (Lawler et al., 2005; Lawler-Row & Piferi, 2006). For this reason, Lawler-Row, Hyatt-Edwards, Wuenssch, and Karremans (2011) argue that scholars should elucidate the theoretical connections between forgiveness and health. However, there is not yet definitive evidence regarding the mechanism for the forgiveness-health relationship (Green, DeCourville, & Sadava, 2012). In the present chapter, we describe the adverse effects of unforgiveness on physical health and develop an integrative conceptual model involving precursors as well as mechanisms that may function as a foundation for future empirical investigations on forgiveness and its influence on health.

Definitions and the Present Review

We use this definition of health: “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (Official Records of the World Health Organization, no. 2, p. 100). It is thus important to measure the presence of positive states (e.g., well-being) and the absence of negative states.

C.R. Lavelock (✉) • D.J. Snipes • B.J. Griffin • E.L. Worthington, Jr. (✉)

E.G. Benotsch • J. Ritter

Department of Psychology, Virginia Commonwealth University, Richmond, VA, USA

e-mail: lavelockc@vcu.edu; eworth@vcu.edu

D.E. Davis

Department of Counseling and Psychological Services, Georgia State University, Atlanta, GA, USA

J.N. Hook

Department of Psychology, University of North Texas, Denton, TX, USA

We define forgiveness as an emotion-focused coping strategy whereby victims of an offense replace negative unforgiving emotions (i.e., bitterness, anger, etc.) with positive other-oriented emotions (e.g., love, empathy, compassion; Wade, Worthington, & Meyer, 2005; Worthington & Scherer, 2004). This definition of forgiveness can expand to accommodate for a pattern of forgivingness across the lifespan (trait forgivingness); it can also include, but does not require, behavioral components often involved in related constructs, such as reconciliation. We build on this stress-and-coping model of forgiveness (Strelan & Covic, 2006; Worthington, 2006, 2013). Extending Lazarus's (1999) model of stress and coping, the offense is the initial stressor. The victim then appraises the meaning of the offense, such as the severity of injustice, or resources available to cope with the offense. To the degree that the stressor is appraised as threatening and not easily coped with, a stress response of unforgiveness manifests that may result in poor health outcomes (Worthington, Witvliet, Pietrini, & Miller, 2007). Forgiveness is one of many strategies to cope with the stress of unforgiveness. In the present review, we seek to illuminate common themes in the existing forgiveness and physical health literature and provide a research agenda based on the status of this literature.

Method of the Review

We conducted our literature search using PsycINFO through February 23rd, 2012 pairing the term "physical health" with "forgiveness." The search resulted in 99 articles. We omitted three articles due to an emphasis on sexual health, which we will not explore due to space constraints, and one article because we could not acquire an English version. A summary table and reference list of these 95 studies can be obtained from the corresponding author. Of the 95 works reviewed, 49 were correlational studies; 26, literature reviews; 6, quasi-experimental studies; 5, experimental studies; 3, case studies; 3, presentations of models or theories; 2, qualitative studies; and 1, a peer commentary. Of the 95, 48 were cross-sectional and 14 were longitudinal; 50 were peer-reviewed articles, 30 were dissertations, and 15 were book chapters.

Results

We organize the results of this review in four sections. First, we illustrate a large portion of the literature that explores unforgiveness responses and health outcomes. Then, we address person variables that serve as precursors to the forgiveness and health relationship: (1) religiousness and spirituality, (2) age, and (3) personality. Next, we focus on the theorized mechanisms that underlie the relationship between forgiveness and health: (1) change in emotions from negative to positive, (2) social

support, and (3) mental and physiological responses. Finally, we address three additional questions about the association between forgiveness and health: (1) the bi-directional relationship between these two variables, (2) the effect of forgiveness interventions on health, and (3) negative aspects of forgiveness on health. Detailed results as well as operationalization of health outcomes via study measures can be found in a summary table available from the corresponding author upon request.

Unforgiveness and Health

Early research on forgiveness focused on its antithetical—the adverse effects of anger and hostility on blood pressure and cardiovascular health (for a review, see Booth-Kewley & Friedman, 1987). Accordingly, forgiveness, as a reducer of anger, became a burgeoning topic in health-related research (e.g., Berry, Worthington, O’Conner, Parrott, & Wade, 2005). Before we delve into mechanisms within the forgiveness and health relationship, we first consider the adverse effects of unforgiveness on health.

The idea of unforgiveness was fleshed out in reviews by Witvliet (2005) and Worthington, Witvliet, Pietrini, and Miller (2007); Witvliet reviewed four decades of research surrounding forgiveness and health. She posited that unforgiveness leads to rumination, avoidance, and revenge, which invites attentional, physiological, and behavioral components of emotion, causing outcomes such as anxiety, depression, hostility, and heart disease. This suggests that an emotional shift caused by components of unforgiveness is responsible for the physiological responses that lead to poor physical health. Notably, when under stress, people often respond with negative emotions like anger, resentment, anxiety, and depression. Those emotional responses are related to elevated stress responses in peripheral physiological systems. Longitudinal research on the effects of unforgiveness and its related mechanisms (e.g., unhealthy coping such as problematic drinking; Webb & Brewer, 2010) is needed to better understand how unforgiveness manifests in physical health outcomes.

Person Variables as Precursors to the Forgiveness and Health Relationship

Religiousness and Spirituality Worthington, Berry, and Parrott (2001) claimed that religion, forgiveness, and health are related to each other, involving a number of mechanisms. Forgiveness can be difficult to separate from religion due to the inherent morality of forgiveness, as well as the role of forgiveness as a religious coping mechanism. Previous research has shown the importance of religious coping in terms of improved health outcomes, even over and above the effect of non-

religious coping (Pargament, Koenig, & Perez, 2000). In his 2003 review, Webb suggested that forgiveness as a spiritual coping mechanism has been tied to better health outcomes, and additional research suggests that religious coping mechanisms in general are tied to better outcomes in both mental and physical health (Pargament et al., 2000).

Personality Though personality traits such as openness and agreeableness are allied to mental and physical health, a forgiving personality potentially affects mental and physical health outcomes more than do other personality factors (Moorhead, Gill, Minton, & Myers, 2012). For example, Lawler-Row and Piferi's (2006) correlational study found that trait forgiveness was tied to well-being, stress, and depression, and was higher in women (than men), individuals over 60 (relative to younger people), and those who attend church frequently (relative to infrequent church attenders). Other studies, such as Berry and Worthington's (2001) quasi-experimental study of 39 adults in romantic relationships, found that people in happy and unhappy relationships differed in personality traits such as high forgiveness and low anger. Trait forgiveness was linked to both better mental and physical health and lower cortisol reactivity.

A victim's perception of his or her transgressor's personality has a strong impact, and this may be more important than the personality of the victim. In a longitudinal study of 39 female college students by Tabak and McCullough (2011), perceived agreeableness of the transgressor was tied to higher levels of victim forgiveness and lower levels of cortisol. This suggested that certain aspects of better cardiovascular health might result from forgiving. However, victims' levels of neuroticism and agreeableness had a small link with cortisol and forgiveness. Thus, Tabak and McCullough concluded that perceived personality of the transgressor might be more important than the victim's personality in the forgiveness-health relationship.

Age Toussaint and Webb (2005) argue that age may be another person variable affecting the relationship between forgiveness and physical health. For example, multiple correlational analyses involving 1,423 nationally representative participants suggested an association between higher forgiveness and health with old age, but not with young and middle age (Toussaint, Williams, Musick, & Everson, 2001). In addition, Turesky and Schultz (2010) conducted a qualitative review of three developmental contextual models of forgiveness. They concluded that a decline of physical health naturally occurs with increasing age. This decline in health led to increased reflection about life, which in turn led to greater striving for meaning and hence greater spirituality, as well as an increased awareness of the approach of death. The sense of impending death might stimulate review of past relationships, increasing the awareness of events that need forgiving. In combination, spirituality and a potential need for forgiveness might engender a sense of peace about the past and with death. These mental health correlates that occur as one's health deteriorates with age might contribute to higher forgiveness outcomes, illustrating a potentially bidirectional, symbiotic relationship between forgiveness and health.

Mechanisms by Which Forgiveness Might Affect Health

Change in Emotion from Negative to Positive Harris and Thoresen's (2003) model of forgiveness and health views forgiveness as functioning to reduce negative traits and increase positive traits. This combination in turn invites better health outcomes as defined by health-promoting behaviors and peak physiological condition. In effect, better health outcomes appear when a reduction of unforgiveness, an increase in positive affect, and their effects on behaviors are combined. For example, Green et al. (2012) conducted a correlational study that focused on the role of emotions in forgiveness. In 623 college freshmen, forgiveness was linked with decreased negative affect, as well as increased positive affect and social support, which were both related to better self-reported health outcomes. It appears that replacing the negative with the positive emotions and motivations, which is at the core of forgiveness, extends both the achievement of forgiveness and its relationship with health.

Social Support Forgiveness may also function to maintain one's social support network, which can influence physical health. For example, Lawler-Row and Piferi (2006) found that individuals who were more forgiving had higher levels of social support, healthy behaviors and spiritual well-being. Those variables in turn affected health outcomes such as illness presence and symptom frequency. Forgiveness and social support both involve the maintenance of relationships. In this way, forgiveness leads to greater physical health, while social isolation and other costs of unforgiveness (as previously discussed in the unforgiveness section) are historically dangerous for individuals and even groups.

Mental and Physiological Responses Forgiveness is tied to several mental health variables that may contribute to physical health outcomes. For example, Lawler et al. (2005) conducted a correlational study examining 82 adults. They concluded that, while the strongest predictor was the reduction of negative affect, both reduced negative affect and reduced stress at least partially mediated the relationship between forgiveness and physical health. In this case, physical health was defined using vital signs and self-reported physical symptoms. Trait forgiveness was also correlated with better conflict management, which fully mediated the relationship between forgiveness and health.

A number of studies have explored the role of physiological responses in explaining the association between forgiveness and physical health. Such research posits that those who forgive others tend to have stronger immune systems (Seybold, Hill, Neumann, & Chi, 2001), less physiological reactivity to stress (Witvliet, Ludwig, & Vander Laan, 2001), lower blood pressure (Lawler et al., 2005), and overall fewer physical symptoms (Toussaint et al., 2001). This research has shown the major players in physiological responses related to forgiveness to be stress-related. Forgiveness' association with lower levels of cortisol (another marker of stress) has found support in a number of studies (Berry & Worthington, 2001; Standard, 2004; Tabak & McCullough, 2011).

Taken together, many mental and physiological variables mediate between forgiveness and physical health (for reviews, see Harris & Thoresen, 2005; Lawler-Row & Reed, 2008; Thoreson, Harris, & Luskin, 2000). Friedberg, Suchday, and Srinivas (2009) conducted a correlational study of 85 cardiac inpatients. They found that by decreasing anxiety and perceived stress, the physiological responses were less and the blood cholesterol was decreased. Those decreases reduced the risk for cardiovascular problems. Thus, better health was tied to forgiveness.

Additional Questions

Could Health Influence Forgiveness? The vast majority of the studies in this review have been correlational. While usually unspoken, the implicit assumption seems to have been that changes in forgiveness cause changes in health. Few studies have shown a bidirectional impact, showing that changes in health cause changes in forgiveness. For example, a quasi-experimental study of 65 college students by Rashid (2004) examined the impact of positive psychology coursework on character strength and development. Connections between several strengths (e.g., intimate attachment, kindness, leadership) and forgiveness were mediated by self-reported peak physical health. Though further evidence is needed via true experimental designs, this study potentially suggests that forgiveness, as well as strengths in the social, religious, and personality realm, may be higher in those who are in good physical health than in poor health.

Forgiveness Interventions Several studies have explored the effects of forgiveness interventions on physical health (Baskin & Enright, 2004; Root & McCullough, 2007). For example, in a quasi-experimental study of 19 elderly individuals using Enright's therapeutic model of forgiveness, participants showed a long-term increase in forgiveness and reduced depression, and short-term improvements in self-perceived physical health (Ingersoll-Dayton, Campbell, & Ha, 2009). It makes sense that short-term health benefits might be related to enhanced state forgiveness. In a particular situation, forgiveness benefits should not be expected to be as lasting as they might be in a situation that taps into trait forgivingness. This type of conclusion can be justified by viewing the process of a forgiveness intervention, where health was found to fluctuate (Browne, 2009). According to the 11 adult participants in Browne's qualitative study, moving through forgiveness is a struggle. It can involve adverse health effects, but it often reduces health ailments in the end. Just knowing that they may reap health benefits was motivating for participants to continue.

One forgiveness intervention designed for children, targeted a very real threat to physical health—bullying. This quasi-experimental study involved 81 elementary school students. Turner (2009) found that forgiveness can stop or prevent bullying from affecting physical health as defined by physical harm. This may also prevent the victim from experiencing a stressful and physically harmful response, thus giv-

ing a potential directionality in the forgiveness and health relationship. Additionally, we see the importance of forgiveness interventions as preventative measures, not only for promoting good behavior, but for protecting mental and physical health.

When Forgiveness Is Not Healthy Not all the reviewed studies demonstrated a positive relationship between forgiveness and physical health (Edmondson, 2005; Hernandez, 2006). One correlational study of 107 adult divorcees found that forgiveness was not linked to lower depression or anxiety, let alone physical health, claiming denial was a healthier coping mechanism than forgiveness (Putnam, 2001). Denial as a substitute to forgiveness has mixed reviews. Other research suggests those who used denial as a coping response to discrimination suffered from higher blood pressure than did those who contested unfair treatment (Harrell, Hall, & Taliaferro, 2003; Krieger & Sidney, 1996).

Some studies link forgiveness to lower levels of physical health. In Toussaint and colleagues' (2001) national sample of nearly 1500 adults, those with a greater tendency to seek forgiveness were at a greater risk for psychological distress, across all age groups. The authors speculated that people who (a) take the relational risk of suggesting forgiveness, (b) may not be genuine in their search for forgiveness, or (c) are high in neuroticism or low in self-esteem, might endure poor mental health outcomes such as anxiety and rumination and the related negative health outcomes. However, it is possible that this psychological discomfort may be a short-term drawback with long term social, psychological, and physiological benefits. More research must examine forgiveness in terms of physiological ups and downs in this process. In short, it is clear that forgiveness is not always the solution for optimal outcomes.

Discussion

Several studies have now examined the links between forgiveness and physical health, and most scholars agree that there are multiple mediators that jointly explain the forgiveness-health relationship. Let us, therefore, examine what we have observed. First, we demonstrated decreased unforgiveness is related to improved physical health. Second, we identified precursors that have been studied in forgiveness and health research. Third, we illustrated that forgiveness works through a variety of mechanisms to produce positive physical health. Finally, we discussed remaining questions of directionality, intervention, and when forgiveness is not healthy. Therefore, we now integrate the above research into a tentative model of forgiveness and health. We conclude with a versatile and interdisciplinary approach to the relationship between forgiveness and physical health (see Fig. 3.1).

Three themes in the research, religiousness, personality, and age serve as precursors to forgiveness. Positive religious coping and experiences include prayer, a positive view of God, feeling forgiven by God, positive experiences with religion, and a nurturing religious culture. A forgiving personality includes high

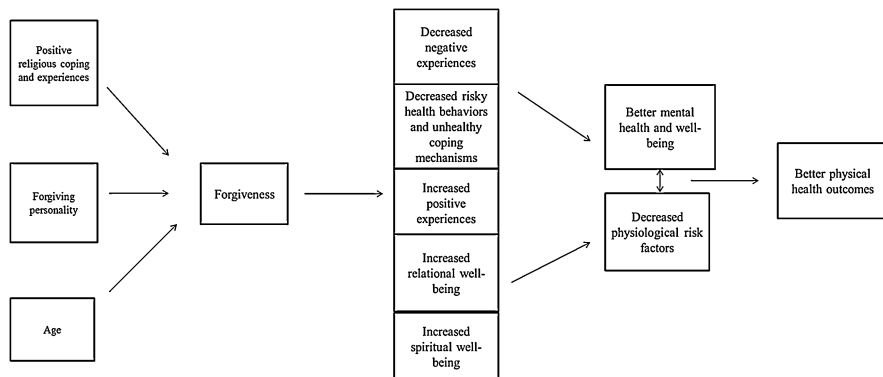


Fig. 3.1 An interdisciplinary conceptual model of forgiveness and health

agreeableness, high perceived agreeableness of a transgressor, low Type A personality tendencies, low neuroticism, and low narcissism. Age considerations include accrued life experience that tends to increase likelihood of forgiveness.

Other themes from the literature find their way into our model among our proposed mechanisms through which forgiveness impacts health. Decreased negative experiences refer to decreased guilt, anger, stress, rumination, avoidance, revenge, feelings of control, tension, anxiety, and depression. Decreased risky health behaviors and unhealthy coping mechanisms may include substance use, gambling, and risky sexual behaviors.

In addition to decreasing negative factors, our model includes increasing positive factors. Increased positive experiences include empathy, altruism, compassion, love, and virtue. Increased relational factors involve social support, high quality relationships, social skills, and conflict management. Increased spiritual well-being includes self-transcendence, inner peace, and connectedness with the sacred and with humanity (i.e., spirituality).

Importantly, this combination of mechanisms eventuates into decreased physiological risk factors and better mental health and general well-being. Decreased physiological risk factors include decreasing hypertension, fatigue, cortisol secretion, cardiovascular symptoms, and overall physical symptomology. Better immune functioning and successful aging can also be included in this category, and in combination with better mental health and general well-being, tends to describe an individual in overall good physical health.

Limitations

There are several limitations to this review. Samples used in research on forgiveness and health have over-represented female, Caucasian young adults. They are

usually healthy, making it difficult to note differences in health due to forgiveness (Porter, 2004). Naturally, external validity and generalizability preclude sweeping conclusions from these findings.

Some of the earliest research in the present review noted a need for psychometrically sound measures of forgiveness (McCullough & Worthington, 1994). However, over the 20 years covered by the review, the assessment of forgiveness has improved. Notably, accurate and psychometrically sound measures have been developed and used such that forgiveness measures are useful for a number of relevant research questions (Worthington et al., 2014). Recently, physiological measures have been used to assess constructs co-occurring with unforgiveness and forgiveness. The inclusion of behavioral measures of correlates of forgiveness could offer a more objective base for forgiveness in health research. For example, requiring objective health indices (e.g., a doctor's physical) in combination with self-report health measures invites higher credibility for studies aiming to reveal changes in or associations with health.

Despite a plethora of effective interventions for forgiveness, such as Worthington's (2003) REACH Forgiveness program and Enright and Fitzgibbons's (2000) Process Model of Forgiveness, few interventions are used in this body of research on forgiveness and physical health. Both operationally and content-wise, this limits evidence on causation and directionality. Valuable content could be gleaned from interventions, yet few studies target health outcomes.

Research Agenda

There are several exciting areas for future research on the forgiveness and health relationship. Most notably, nearly every study examined in this review noted that future research must include longitudinal and experimental studies with more diverse populations.

Future Research in Religiousness Forgiveness has often been associated with religion, yet many questions remain in this context. For instance, early research noted a need for future studies to explore forgiveness and health factors of highly religious people, compared to more secular people (Coates, 1997). More research is also needed on how religious values and church rules, with an emphasis on forgiveness, affect the health of their followers (Quenstedt-Moe & Popkess, 2014). Furthermore, even if religion may be associated with the forgiveness-health link, problems might occur. It may be especially stressful when religious people, who strongly value forgiveness, have difficulty forgiving (Lawler-Row, 2010). Failing to live up to their standards for forgiveness may intensify stress. Another interesting facet of religion that warrants analysis is feeling forgiven by God. Could there be health benefits in the relief of feeling forgiven, by each other and by God?

Future Research in Personality One of the most difficult things about generalizing forgiveness research is that substantial individual differences exist in

forgiveness. These differences in forgivingness and trait anger should be considered when researching and intervening (Berry & Worthington, 2001), and the forgiving person's personality should be more closely examined (Toussaint & Webb, 2005). State forgiveness and trait forgivingness need to be studied further as well (Porter, 2004); they might relate differently to health.

Future Directions in Developmental Psychology The effect of age and development on forgiveness and health has been well established (Toussaint et al., 2001). Forgiveness also aids health in decline. One might accept and forgive one's body for failing. Future studies could identify developmental changes in general and across different demographics. Might there be disparities based in gender, socioeconomic status, marital status, or race/ethnicity in forgiveness that might account for parallel disparities in health?

Future Research in Mental Health One up-and-coming avenue regarding mental health as a mediator of forgiveness and physical health is self-forgiveness. Self-forgiveness has only recently been starkly differentiated from other-forgiveness, and past studies have hinted that the two may contribute to related but distinct outcomes (Louden-Gerber, 2009). Both self and other forgiveness involve taking less offense, taking more responsibility for how one feels, and positively changing one's perception, feelings, and behavior (Luskin, 2002). These and other correlates of self and other forgiveness, including personality and religious factors, should be studied in the future as causative to the mental state, which mediates forgiveness and health.

Another important contributor to mental health is social support. Forgiveness and social support both involve the maintenance of relationships and in this way, might enable greater health. Because social support has already been established as a likely mechanism in the link between forgiveness and mental health, it may not seem worthy of extensive future investigation. However, social support should not be forgotten in the context of self-forgiveness, where little research has been conducted. For example, consider a person with strong social support in which healthy coping mechanisms like forgiveness are frequently exercised. It stands to reason that such a person could more readily practice self-forgiveness than someone who has more insecure attachments and little reference point for how to forgive.

Future Research in Physiology With few exceptions, the neuropsychological mechanisms of forgiveness have been less investigated than some other aspects of forgiveness and health (Tsuang, Eaves, Nir, Jerskey, & Lyons, 2005). Twin studies, for example, may show genetic effects on forgiveness that aid health outcomes. In a study outside of our review, Worthington and Sotoohi (2010) have reviewed the research on the physiology of forgiveness, illustrating the potential for growth in this area of study. Future studies should examine how the neurobiology of other emotions compares to that of forgiveness (Farrow & Woodruff, 2005).

Future Directions in Potential Mediators Many studies in the present review noted potential mediators to be studied in future research. Some of these include positive religious coping (Witvliet, Phipps, Feldman, & Beckham, 2004), the relationship of the victim and the transgressor, the nature of the offense (Lawler et al., 2005), cognitive flexibility (Lawler-Row & Reed, 2008), empathy, self-blame, self-doubt, poor coping skills, poor social support, and insecurity (Avery, 2008).

Future Research in Intervention and Directionality Studies that reveal the directionality of the forgiveness and health relationship have been suggested since this research began, yet few have been conducted. While it is assumed that the effect moves from forgiveness to physical health with some mediators in between, research in the opposite direction is recommended. Does physical health affect forgiveness? Only two studies in this review found results which may support that claim (Browne, 2009; Rashid, 2004).

Forgiveness interventions may reveal directionality in this relationship. The process of these interventions should be measured alongside physiological indices to see if any part of forgiveness has greater health implications (Hernandez, 2006). Such studies would offer insight into reducing negative states versus increasing positive states in terms of health outcomes.

Conclusion

Current research notes an undeniable link of forgiveness to health, but the size of the relation as well as its mechanisms remains elusive (Toussaint & Webb, 2005). In this chapter, we organize and review existing research on forgiveness and health. Major themes revealed themselves, often referring to decreasing negative experiences (stress, anger, rumination, and depression), increasing positive experiences (affect, social support, positive spiritual experiences), and physiological responses (blood pressure, cortisol). We present an interdisciplinary model which incorporates these and more themes as a way to better understand how forgiveness manifests physically. Such a model provides a bird's-eye view of the state of the field and informs future research by providing evidence from existing research and topics for further study that will aid in a more complete understanding of forgiveness.

Like anything worthwhile, one cannot rush forgiveness or it will mean nothing; it must be experienced in order to work effectively through one's pain of being hurt or offended (Fisher & Exline, 2006). This exercise of the human condition by strengthening relationships and the self through forgiveness is what brings a greater richness to the quality of life that is so intertwined with physical health.

References¹

- *Avery, C. M. (2008). The relationship between self-forgiveness and health: Mediating variables and implications for well-being. *Dissertation Abstracts International*, 69(3), 1939B.
- Baskin, T. W., & Enright, R. D. (2004). Intervention studies on forgiveness: A meta analysis. *Journal of Counseling and Development*, 82, 79–90.
- *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(4), 447–455.
- Berry, J. W., Worthington, E. L., Jr., O'Connor, L. E., Parrott, L., III., & Wade, N. G. (2005). Forgivingness, vengeful rumination, and affective traits. *Journal of Personality*, 73(1), 183–225.
- Booth-Kewley, S., & Friedman, H. S. (1987). Psychological predictors of heart disease: A quantitative review. *Psychological Bulletin*, 101(3), 343–362.
- *Browne, P. E. (2009). Forgiveness therapy: A qualitative study of the forgiveness experience of people who have undergone forgiveness as a counseling intervention. *Dissertation Abstracts International*, 70(4), 2566B.
- *Coates, D. (1997). The correlations of forgiveness of self, forgiveness of others, and hostility, depression, anxiety, self-esteem, life adaptation, and religiosity among female victims of domestic violence. *Dissertation Abstracts International*, 58(5), 2667B.
- *Edmondson, K. A. (2005). Forgiveness and rumination: Their relationship and effects on psychological and physical health. *Dissertation Abstracts International*, 65(12), 6694B.
- Enright, R. D., & Fitzgibbons, R. P. (2000). *Helping clients forgive: An empirical guide for resolving anger and restoring hope*. Washington, DC: American Psychological Association.
- *Farrow, T. F. D., & Woodruff, P. W. R. (2005). Neuroimaging of forgiveness. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 259–272). New York, NY: Brunner-Routledge.
- Fisher, M. L., & Exline, J. J. (2006). Self-forgiveness versus excusing: The roles of remorse, effort, and acceptance of responsibility. *Self and Identity*, 5(2), 127–146.
- *Friedberg, J. P., Suchday, S., & Srinivas, V. S. (2009). Relationship between forgiveness and psychological indices in cardiac patients. *International Journal of Behavioral Medicine*, 16(3), 205–211.
- *Green, M., DeCourville, N., & Sadava, S. (2012). Positive affect, negative affect, stress, and social support as mediators of the forgiveness-health relationship. *Journal of Social Psychology*, 152(3), 288–307.
- Harrell, J., Hall, S., & Taliaferro, J. (2003). Physiological responses to racism and discrimination: An assessment of the evidence. *American Journal of Public Health*, 93, 243–248.
- *Harris, A. H. S., & Thoresen, C. E. (2003). Strength-based health psychology: Counseling for total human health. In B. Walsh (Ed.), *Counseling psychology and optimal human functioning* (pp. 199–227). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- *Harris, A. H. S. & Thoresen, C. E. (2005). Forgiveness, unforgiveness, health, and disease. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 321–334). New York, NY: Brunner-Routledge.
- *Hernandez, D. H. (2006). Hostility, forgiveness, and cardiovascular reactivity to stress: Does forgiveness mediate or moderate the relation between hostility and cardiovascular reactivity to anger-eliciting laboratory experiences? *Dissertation Abstracts International*, 66(9), 5089B.
- *Ingersoll-Dayton, B., Campbell, R., & Ha, J. (2009). Enhancing forgiveness: A group intervention for the elderly. *Journal of Gerontological Social Work*, 52(1), 2–16.

¹*indicates presence of reference in Supplemental Table.

- Krieger, N., & Sidney, S. (1996). Racial discrimination and blood pressure: The CARDIA study of young black and white adults. *American Journal of Public Health, 86*(10), 1370–1378.
- *Lawler, K. A., Younger, J. W., Piferi, R. L., Jobe, R. L., Edmondson, K. A., & Jones, W. H. (2005). The unique effects of forgiveness on health: An exploration of pathways. *Journal of Behavioral Medicine, 28*(2), 157–167.
- *Lawler-Row, K. A. (2010). Forgiveness as a mediator of the religiosity-health relationship. *Psychology of Religion and Spirituality, 2*(1), 1–16.
- *Lawler-Row, K. A., Hyatt-Edwards, L., Wuensch, K. L., & Karremans, J. C. (2011). Forgiveness and health: The role of attachment. *Personal Relationships, 18*(2), 170–183.
- *Lawler-Row, K. A. & Piferi, R. L. (2006). The forgiving personality: Describing a life well lived? *Personality and Individual Differences, 41*(6), 1009–1020.
- *Lawler-Row, K. A. & Reed, K. A. (2008). Forgiveness and health in women. In W. Malcolm, N. DeCourville, & K. Belicki (Eds.), *Women's reflections on the complexities of forgiveness* (pp. 75–90). New York, NY: Routledge.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York, NY: Springer.
- *Louden-Gerber, G. M. (2009). A group forgiveness intervention for adult male homeless individuals: Effects on forgiveness, rumination, and social connectedness. *Dissertation Abstracts International, 69*(12), 4640A.
- Luskin, F. M. (2002). *Forgive for good: A proven prescription for health and happiness*. San Francisco, CA: Harper Collins.
- *McCullough, M. E., & Worthington, E. L., Jr. (1994). Encouraging clients to forgive people who have hurt them: Review, critique, and research prospectus. *Journal of Psychology and Theology, 22*(1), 3–20.
- *Moorhead, H. J. H., Gill, C., Minton, C. A. B., & Myers, J. E. (2012). Forgive and forget? forgiveness, personality, and wellness among counselors-in-training. *Counseling and values, 57*(1), 81–95.
- *Pargament, K. I., Koenig, H. G., & Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the R-COPE. *Journal of Clinical Psychology, 56*(4), 519–543.
- *Porter, L. G. (2004). Personal narratives as reflections of identity and meaning: A study of betrayal, forgiveness, and health. *Dissertation Abstracts International, 64*(9), 4666B.
- *Putnam, J. W. (2001). Revenge and forgiveness: Mutually exclusive or coexisting constructs? *Dissertation Abstracts International, 61*(8), 4424B.
- *Quenstedt-Moe, G., & Popkess, S. (2014). Forgiveness and health in Christian women. *Journal of Religion and Health, 53*(1), 204–216.
- *Rashid, T. (2004). Enhancing strengths through the teaching of positive psychology. *Dissertation Abstracts International, 64*(12), 6339B.
- *Root, L. M., & McCullough, M. E. (2007). Low-cost interventions for promoting forgiveness. In L. L'Abate (Ed.), *Low-cost approaches to promote physical and mental health: Theory, research, and practice* (pp. 415–434). New York, NY: Springer.
- 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*(3), 250–259.
- *Standard, S. (2004). Effects of a forgiveness intervention on salivary cortisol, DHEA, and psychological variables. *Dissertation Abstracts International, 65*(4), 2114B.
- Strelan, P., & Covic, T. (2006). A review of forgiveness process models and a coping framework to guide future research. *Journal of Social and Clinical Psychology, 25*(10), 1059–1085.
- *Tabak, B. A., & McCullough, M. E. (2011). Perceived transgressor agreeableness decreases cortisol response and increases forgiveness following recent interpersonal transgressions. *Biological Psychology, 87*(3), 386–392.
- *Thoreson, C. E., Harris, A. H. S., & Luskin, F. (2000). Forgiveness and health: An unanswered question. In M. E. McCullough, K. L. Pargament, & C. E. Thoreson (Eds.), *Forgiveness: Theory, research, and practice* (pp. 254–280). New York, NY: Guilford Press.

- *Toussaint, L. L., & Webb, J. R. (2005). Theoretical and empirical connections between forgiveness, mental health, and well-being. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 349–362). New York, NY: Brunner-Routledge.
- *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*(4), 249–257.
- *Tsuang, M. T., Eaves, L., Nir, T., Jerskey, B. A., & Lyons, M. J. (2005). Genetic influences on forgiving. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 245–258). New York, NY: Brunner-Routledge.
- *Turesky, D. G., & Schultz, J. M. (2010). Spirituality among older adults: An exploration of the developmental context, impact on mental and physical health, and integration into counseling. *Journal of Religion, Spirituality & Aging, 22*(3), 162–179.
- *Turner, P. J. (2009). Impact of PATTS group intervention on forgiveness in children. *Dissertation Abstracts International, 70*(5), 3190B.
- Wade, N. G., Worthington, E. L., Jr., & Meyer, J. E. (2005). But do they work? A meta-analysis of group interventions to promote forgiveness. In E. L. Worthington Jr. (Ed.), *Handbook of forgiveness* (pp. 423–439). New York, NY: Brunner-Routledge.
- *Webb, J. R. (2003). Spiritual factors and adjustment in medical rehabilitation: Understanding forgiveness as a means of coping. *Journal of Applied Rehabilitation Counseling, 34*(3), 16–24.
- *Webb, J. R., & Brewer, K. (2010). Forgiveness, health, and problematic drinking among college students in Southern Appalachia. *Journal of Health Psychology, 15*(8), 1257–1266.
- *Witvliet, C. V. O. (2005). Unforgiveness, forgiveness, and justice: Scientific findings on feelings and physiology. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 305–320). New York, NY: Brunner-Routledge.
- Witvliet, C. V. O., Ludwig, T. E., & Vander Laan, K. L. (2001). Granting forgiveness or harboring grudges: Implications for emotions, physiology, and health. *Psychological Science, 12*, 117–123.
- *Witvliet, C. V. O., Phipps, K. A., Feldman, M. E., & Beckham, J. C. (2004). Posttraumatic mental and physical health correlates of forgiveness and religious coping in military veterans. *Journal of Traumatic Stress, 17*(3), 269–273.
- World Health Organization. (1948). *Definition of health. Preamble to the constitution of the World Health Organization as adopted by the International Health Conference*, New York, 19–22 June, 1946; signed on 22 July, 1946 by the representatives of 61 States (official records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
- Worthington, E. L., Jr. (2003). *Forgiving and reconciling: Bridges to wholeness and hope*. Downers Grove, IL: Intervarsity Press.
- Worthington, E. L., Jr. (2006). *Forgiveness and reconciliation: Theory and application*. New York, NY: Routledge.
- Worthington, E. L., Jr. (2013). *Moving forward: Six steps to forgiving yourself and breaking free from the past*. Colorado Springs, CO: WaterBrook Multnomah.
- Worthington, E. L., Jr., Berry, J. W., & Parrott, L., III. (2001). Unforgiveness, forgiveness, religion, and health. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives* (pp. 107–138). New York, NY: Guilford Press.
- Worthington, E. L., Jr., Lavelock, C. R., Witvliet, C. V. O., Rye, M. S., Tsang, J., & Toussaint, L. (2014). Measures of forgiveness. In G. J. Boyle & D.H. Saklofske (Eds.), *Measures of personality and social psychological constructs* (pp. 474–502). New York, NY: Elsevier Academic 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 & Health, 19*, 385–405.
- Worthington, E. L., Jr., & Sotoohi, G. (2010). Physiological assessment of forgiveness, grudges, and revenge: Theories, research methods, and implications. *International Journal of Psychology Research, 5*(3/4), 291–316.
- Worthington, E. L., Jr., Witvliet, C. V. O., Pietrini, P., & Miller, A. J. (2007). Forgiveness, health, and well-being: A review of evidence for emotional versus decisional forgiveness, dispositional forgiveness, and reduced unforgiveness. *Journal of Behavioral Medicine, 30*(4), 291–302.