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THE RELATIONSHIP BETWEEN EMOTIONS AND HEALTH

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Introduction

Sometimes we are prone to colds, asthmatic attacks, high blood pressure and other ailments because of our emotional response to the stresses of life. The idea that diseases spring from internal responses to events in our lives is not new and is found in the literature and traditions of many cultures.[1] The earliest medical scholars like Hippocrates, understood that there is a relationship between personal emotional traits and disease causation.[2] In 200 C.E., Galen, who was one of the most influential physicians of all time, wrote that melancholic women are more susceptible to breast cancer than sanguine women.[3] Practitioners of early Indian Ayurvedic medicine theorized that the prognosis of a patient is based on his/her emotional responses to external stimuli, so that a patient with a poor prognosis may be afflicted by intensely negative emotions like hatred, violence, grief, and ingratitude. These theories are not farcical because the medical world is rapidly presenting more and more scientific evidence on the relationship between physical health and our emotional well-being. Indeed, medical practitioners who used to focus on the details of the anatomy or pathology of a sick person have now acknowledged that emotions, whether positive or negative, being a part of human expression, play a major role in health and illness.

In the past two decades, the scientific arena has become increasingly more interested in the relationship between emotions and the immune system, which in turn affects the whole person. In the 1980s, medical research substantiated the concept that what we think and feel affects our immune system through a biochemical process. Psychoneuroimmunology is a relatively new science that explores and describes the relationship between emotions, both positive and negative, and the responses of the human body. For example, in 1981 Dr. G. F. Solomon published his findings which, for the first time, indicated the relationship

[1]William Clark, *At War Within* (NY: Oxford University Press, 1995), 221.

[2]Clayton E. Tucker-Ladd, *Psychological Self-Help* [book on-line], accessed 13 September 2004; available from http://www.psychcentral.com/psy.help/chap5/chap5.htm; Internet.

[3]Rachel Charles, *Mind, Body and Immunity* (London: Cedar, 1996), 49-50.

between rheumatoid arthritis and personality conflict. He discovered that when female rheumatoid arthritic patients were compared with their sisters who did not have the disease, those who had the disease scored high on perfectionism, compliance, subservience, nervousness, introversion, depression and sensitivity to anger. By contrast, their healthy sisters described themselves as "liking people," being easy to get acquainted with and enjoying life in a generally unruffled manner.[4] This study, as well as several others, indicate that there is a direct relationship between emotions and physical well being.

Research Confirms the Bible and Ellen G. White's Counsel

The evidence from modern medical research on how our emotions affect our physical well-being is consistent with the Bible and the writings of Ellen G. White (EGW). We will turn our attention to this in the next section.

Body Defense Downers

These are factors that compromise the defense system of the body. They are both external (like viruses and bacteria) and internal (like emotions and feelings). For our purposes we will focus on the latter. No specific word for emotion is found in the Bible. However, there are several references to men and women in the Bible who have expressed some of the emotional responses that have been studied by researchers today. Gen 3:8-10 records that Adam and Eve were afraid of the Lord and hid among the trees in the Garden of Eden. Moses was so angry at the sight of the golden calf and the people dancing around it that he shattered the tablets of stone containing the Ten Commandments, written by God's own fingers. He then burned the golden calf, took the resulting powder and scattered it in the water and made the offending Israelites drink it (Exod 32:15-20). Nabal the Calebite, refused to feed David and his men who had protected both his sheep and shepherds from harm, and instead held a great feast. He later learned that his wife Abigail had secretly taken food to David's company. Realizing the consequences, his heart failed and he died ten days later (1 Sam 25:37-38). John Wilkinson believes that Nabal actually suffered a fatal heart attack.[5] Job spoke of both the bitterness he felt (10:1) and the hopelessness he experienced (6:11). David's distress as expressed in Ps 31:9,10, caused his eyes to grow weak with sorrow, his body and soul to rock with grief, his life to consume with anguish, his strength to fail and his bones to grow weak. Solomon conveys the message that a broken spirit dries up the bones (Prov 15:13) and advised in Eccl 7:9 not to be hasty in anger.

The Bible also underscores the effects of negative emotions on health. Jer 45:3 describes how sorrow and pain caused the prophet to feel worn out and

[4]Ibid.,

[5]John Wilkinson, *The Bible and Healing* (Edinburgh: Handsel, 1998), 42.

restless. Jeremiah disclosed to Baruch his sorrow and pain. The books of Lamentations and Ecclesiastes convey a rather depressing emotional overtone. Matt 6:25-31 talks about people's worries in life while God urges us not to worry.

More than 100 years ago, EGW wrote about the effects of certain emotional responses on the body. She claims that many of the diseases from which people suffer are the result of mental depression. Grief, anxiety, discontent, remorse, guilt and distrust, all tend to break down the life forces and to invite decay and death.[6] She wrote perceptively:

> Sadness deadens the circulation in the blood vessels and nerves and also retards the action of the liver. It hinders the process of digestion and of nutrition and has a tendency to dry up the marrow (interior substance) of the whole system.[7]

She indicates that it is worry, not work, that kills.[8] Anxiety tends to cause weakness and disease,[9] while dissatisfied feelings and discontented repining cause sickness of body and mind.[10] She claims that nothing is so fruitful a cause of disease as depression, gloominess and sadness.[11]

Our day-to-day response to psychological stresses influences our defense system. A growing body of research confirms that the biblical counsel and that of EGW regarding the influence of emotions on health are real. Let us examine some of these findings.

The U.S. Center for Disease Control and Prevention studied the relationship between negative affects and the risk for hypertension among 3,310 persons. Results indicated that negative affects are associated with an elevated risk of hypertension and are predictive of the development of hypertension.[12]

D. M. Brynes of the Department of Psychology at the University of Miami led a study on the effects of pessimism and its influence on the natural killer (NK)[13]

[6]Ellen G. White, *Ministry of Healing* (Washington, DC: Review and Herald, 1905), 241-59.

[7]Ellen G. White to J. N. Andrews, 29 March 1883, Letter 1, 1883, Ellen G. White Research Center, Adventist International Institute of Advanced Studies (EGWRC-AIIAS), Silang, Cavite, Philippines.

[8]Ellen G. White to Brethren and Sisters, 20 May 1903, Letter 208, 1903, EGWRC-AIIAS.

[9]White, *Ministry of Healing*, 229.

[10]Ellen G. White, *Testimonies to the Church* (Mountain View, CA: Pacific Press, 1855), 1:566.

[11]Ibid., 702.

[12]Bruce Jonas and James Lando, "Negative Affects as a Prospective Risk Factor for Hypertension," *Journal of Psychosomatic Medicine* 62/2 (2002): 188.

[13]These are white blood cells that are responsible for seeking and destroying cancerous and infected cells. They constitute the body's first line of defense.

and suppressor T-cells[14] in HIV positive women at risk for cervical cancer. The researchers found that greater pessimism is related to lower NK cytotoxicity[15] and suppressor T-cells, lessening the capability to kill tumors and to stop NK cell production when the pathogen no longer poses a threat. This results in an increased risk for future promotion of abnormal development of tissues in the cervix, to the extent of becoming malignant, with the tendency to spread to healthy tissues among HIV positive minorities.[16]

The department of Periodontology, College of Dentistry, at Ohio State University, studied the effects of examination stress on wound healing in the lining of a cavity such as that of the mouth or stomach. The conclusion indicates that during examination time, it takes three days longer for a 3.5 mm wound to heal completely because of a sixty-eight percent decline in the production of interleukin, a protein that controls immune response. This suggests that even something transient, predictable, and relatively benign as stress caused by an examination, may indeed be quite a significant factor when it comes to the healing of a wound.[17]

N. Pavlidis and M. Chirigos, in their study on stress and impairment of the T-cells that destroy tumor cells, observe that hormones released from the adrenal gland during a stressful period of time were able to inhibit macrophage cytotoxicity[18] and thus affect the host's immunosurveillance, that is, the ability of the immune system to recognize a tumor antigen[19] as a foreign body.[20]

Researchers from the Department of Epidemiology, University of Michigan, studied the relationship between anger expression and the incident of hypertension. They concluded that there is strong epidemiological evidence for a positive

[14]T-cells are a specialized group of white blood cells that attack and kill anything that invades the human body. The suppressor T-cells are special cells that terminate T-cell activity once the fighting is over.

[15]Natural Killer (NK) cytotoxic cells are like the body's civil defense force attacking anad destroying diseased cells, particularly cancer cells.

[16]D. M. Byrnes, M. H. Antoni, K. Goodkin, J. Efantis-Potter, D. Asthana, T. Simon, J. Munajj, G. Ironson, and M. A. Fletcher, "Stressful Events, Pessimism, Natural Killer Cell Cytotoxicity, and Cytotoxic/suppressor T cell in HIV+ Black Women at Risk for Cervical Cancer," *Journal of Psychosomatic Medicine* 60/6 (1998): 714-22.

[17]P. T. Marucha, J. K. Kiecolt-Glaser, and M. Favagehi, "Mucosal Wound Healing is Impaired by Examination Stress," *Journal of Psychosomatic Medicine* 60/3 (1988): 362-65.

[18]Macrophage cytotoxicity refers to the ability of the white blood cells to inspect the surfaces of all the cells they encounter.

[19]An antigen is a toxic substance produced by a bacterium. The body's immune system responds by producing antibodies.

[20]N. Pavlidis and M. Chirigos, "Stress-induced Impairment of Macrophage Tumoricidal Function," *Journal of Psychosomatic Medicine* 42/1 (1980): 47-54.

relationship between anger expression style—either anger is expressed or suppressed—and hypertension.[21]

John Gallacher and a team of researchers concluded that anger, either expressed or suppressed, was predictive of developing occlusion of the heart and the coronary blood vessels due to lack of blood supply to these organs.[22]

The effects of performing a frustrating twenty-one minute laboratory task, such as a Stroop test, on the cellular immune response was studied by E. A. Bachen and colleagues. A Stroop test consists of 200 words such as "red" and "green," each printed in a color different from the one it actually signifies. For example, the word "red" may be printed in green ink and the word "green" may be printed in red ink. Normally, it is done in two minutes with the participants calling out the color of the ink. This test typically stresses people and induces physical changes such as rapid heart rate. The study discovered that taking a frustrating test, even for period as short as twenty-one minutes, reduces cell division and alterations in various circulating lymphocyte populations[23] resulting in a diminished T-helper/T-suppressor cell ratio.[24]

The effects of hopelessness on health has also been investigated. The focus was on hopelessness as a predictor of mortality in older Mexican and American-Europeans. The results suggest that hopelessness as an emotional factor is a significant predictor of mortality in these ethnic populations.[25] Others have studied the significance of hopelessness, the risk of mortality, and the incidence of heart attack and cancer. They showed that a high degree of hopelessness is a predictor of myocardial infarction, while moderate hopelessness was a predictor for cancer development.[26]

[21]S. A. Everson, D. E. Goldberg, G. A. Kaplan, J. Julkunen, and J. T. Salonen, "Anger Expression and Incident of Hypertension," *Journal of Psychosomatic Medicine* 60/6 (1998): 730-35.

[22]John Gallacher, John W. G. Yarnell, Peter M. Sweetnam, Peter C. Elwood, and Stephen A. Stansfeld, "Anger and Incident Heart Disease in the Caerphilly Study," *Journal of Psychosomatic Medicine* 61/4 (1999): 446.

[23]These are white blood cells that are constantly circulating throughout the body and are responsible for recognizing antigens and producing antibodies to destroy them.

[24]E. A. Bachen, S. B. Manuck, A. L. Marsland, S. Cohen, S. B. Malkoff, M. F. Muldoon, and B. S. Rabin, "Lymphocyte Subset and Cellular Immune Response to a Brief Experimental Stressor," *Journal of Psychosomatic Medicine* 54/6 (1992): 686-97.

[25]Stephen Stem, Rahul Dhanda, and Helen Hazuda, "Hopelessness Predicts Mortality in Older Mexican and European Americans," *Journal of Psychosomatic Medicine* 63/3 (2001): 344-51.

[26]S. A. Everson, D. E. Goldberg, G. A. Kaplan, R. D. Cohen, E. Pukkala, J. Tuomilehto, and J. T. Salonen, "Hopelessness and Risk of Mortality and Incidence of Myocardial Infarction and Cancer," *Journal of Psychosomatic Medicine* 58/2 (1996): 113-21.

Beverly Brummett was the lead researcher in a study on social isolation and the risk of mortality in coronary artery disease. It was shown that participants with three or fewer people in their social support network have a very high risk of cardiac mortality that is not attributable to confounding heart disease severity, demographical or psychological stress.[27]

Even among children, particularly boys, stress due to family conflict plays an important role in the development of coronary risk.[28]

Finally, seventy-five first-year medical students at Harvard University were tested to identify the effects of naturally occurring stressors on components of the immune response. The results of negative emotions on the immune system are summarized in the table below:[29]

Summary of the Effects of Negative Emotions on the Immune System

Negative Emotions	**Effects on the Immune System**
Bereavement	Decreased lymphocyte proliferation
Pessimism	Decreased lymphocyte reactivity; decreased T-cell effectiveness
Depression	Decreased T-cells; decreased number and function of lymphocytes; decrease NK cells
Academic stress	Decreased NK cell activity; decreased T-cells; decrease in certain immune chemicals; decreased immunoglobulin A; increased susceptibility to herpes virus
Loneliness	Decreased NK activity
Chronic stress	Decreased T-cells; decreased NK cells; decreased B cells

[27]Beverly Brummett, John C. Barefoot, Hene Siegler, Nancy Clapp-Channing, Barbara Lytle, Hayden Bosworth, Redford Williams Jr., and Daniel Mark, "Characteristics of Socially Isolated Patients with Coronary Artery Disease Who are at Elevated Risk of Mortality," *Journal of Psychosomatic Medicine* 63/2 (2001): 267-72.

[28]G. Weidner, J. Hutt, S. L. Connor, and N. R. Mendell, "Family Stress and Coronary Risk in Children," *Journal of Psychosomatic Medicine* 54/4 (1992): 471-79.

[29]J. K. Keicolt-Glaser, W. Gamer, C. Speicher, G. M. Penn, J. Holliday and R. Glaser, "Psychosocial Modifiers of Immunocompetence in Medical Students," *Journal of Psychosomatic Medicine* 46/1 (1984): 7-14.

Divorce / separation/ poor marital quality	Decreased lymphocyte function; decreased T-cell effectiveness
Expressed need for power and control	Decreased NK activity; decreased lymphocytes
Negative behavior during discussions of marital problems	Decrease NK activity; decrease macrophage; decreased immunity by mitogen test[30]

Body Defense Boosters

Defense boosters are factors that build up the body's mechanism to fight off illness. Emotional balance is certainly included here. The Bible is not silent about how positive emotions affect health. While the Word of God expresses these health-promoting emotions in different ways, they all underline the principle that a healthy life is basically affected by our emotional state.

The Bible describes several positive emotional responses. The Lord commanded Moses to be of good courage and be not afraid (Deut 31:6,7). 2 Chron 20:27,28 describes the joy of Jehoshaphat and his people when God delivered them from their enemies. They returned to Jerusalem with praises and thankfulness to the Lord. The kingdom experienced peace. Esther and the Jews were joyful when King Xerxes reversed the devising of the wicked Haman whose intention was to annihilate the Jewish population (Esth 8:15-17). David wrote in Ps 42:11 that even if the Lord had cast him down, yet he will "praise Him who is the health of my countenance and my God."[31] Ps 71:14 records, "But I will hope continually, and will yet praise thee more and more." Prov 17:22 speaks about the cheerful heart as a good medicine. Isa 26:3 is a promise on how we can attain peace in this world. Many people are suffering from depression, but Isa 40:31 exclaims, "Even youths grow tired and weary, and young men stumble and fall; but those who hope in the Lord will renew their strength. They will soar on wings like eagles; they will run and not grow weary, they will walk and not be faint" (NIV). Hope can make a weak person strong and a sad person happy. Nehemiah instructed the Israelites not to grieve, for the joy of the Lord is their strength (Neh 8:10). No wonder in Matt 11:28, God promises to give us peace if we come unto Him. This peace, which He alone can give, would "impart vigor to the mind and health to the body."[32] The

[30]This is a functional test that determines the activity of the cells in the immune system.

[31]Except otherwise noted, all Scripture quotations are from the KJV.

[32]Ellen G. White, *Desire of Ages: The Conflict of the Ages in the Life of Christ* (Mountain View, CA: Pacific Press, 1940), 270.

example of Jesus sleeping in the boat on the Sea of Galilee when a storm erupted, places the disciples' fear and distress in bold relief. But Jesus' voice saying, "Peace. Be Still!" calmed not only the rough seas but also the disciples' fears. Calmness was regained, tensed muscles relaxed and thus the immune system regained its function. John 14:1 advises us not to let our hearts be troubled. Paul, in his letter to the Philippians, encourages the people to rejoice and not be anxious; instead, he counsels them to pray with thanksgiving and the Lord will guard their hearts and their minds in Christ Jesus (4:4-7).

White insists that courage, hope, faith, sympathy, and love promote health and prolong life. A contented mind and a cheerful spirit are health to the body and strength to the soul.[33] She claims that the pleasure of doing good to others "imparts a glow to the feelings, which flashes through the nerves, quickens the circulation of the blood and induces mental and physical health."[34] Indeed, "nothing tends to promote health of the person than does a spirit of gratitude and praise."[35]

Science does not have substantial studies on positive emotional responses and their influence on health because the field of medicine is more focused on studying the disease process than health itself.[36] However, some researchers have conducted studies on how laughter, optimism, satisfying relationships and personal sharing positively affect health and well-being.

Kubzansky and others conducted a study among 1,306 men using the Minnesota Multiphasic Personality Inventory, a standardized questionnaire developed at the University of Minnesota and one of the most popular clinical psychology personality inventories in use today. Results from a 10-year follow-up suggest that optimism might protect against the risk of coronary heart disease among older men.[37]

Mary Payne Bennett's dissertation on the effect of mirthful laughter on stress and NK cytotoxicity, discovered that persons who laughed heartily had a significant improvement in NK cytotoxicity. This suggests that laughter has the potential to improve NK activity and may, therefore, be used as complementary therapy in the care of cancer patients.[38]

A Harvard University study on the effects of positive emotions on the immune system is summarized in the table below.[39]

[33]White, *Ministry of Healing*, 241-59.

[34]White, *Testimonies*, 4:56.

[35]White, *Ministry of Healing*, 251.

[36]Bill Moyer, *Healing and the Mind* (NY: Doubleday/Dell, 1993), 197.

[37]Laura Kubzansky, David Sparrow, Pantel Vokonas, and Ichiro Kawachi, "Is the Glass Half Empty or Half Full?" *Journal of Psychosomatic Medicine* 63/6 (2001): 910-16.

[38]Mary Payne Bennett, "The Effect of Mirthful Laughter on Stress and NK Cell Cytotoxicity" (Ph.D. diss., Rush University, 1998).

[39]J. K. Kiecolt-Glaser et al., 7-14.

Summary of the Effects of Positive Emotions on the Immune System

Positive Emotions	Effects on the Immune System
Satisfying personal relationships and social support	Increased lymphocyte function; increased NK activity, increased immunity by mitogen test; increased immune response to hepatitis B vaccine
Personal sharing and disclosure of traumatic experiences	Increased lymphocyte response
Humor and laughter	Increased immunoglobulin A (a class of protein molecule that acts as a specific antibody; increased lymphocyte count and activity
Relaxation	Increased T-cell effectiveness; increased NK cell activity; decreased blood levels of stress hormones
Group intervention and support	Increased NK cell number and activity; increased number of lymphocytes

Conclusion

The body's defense system is such a complex and well orchestrated mechanism that modern medical science fills volumes in an effort to describe it. The constant interaction between the organs in these systems indicates a Grand Designer. We are "fearfully and wonderfully made" (Ps 139:14), such that our defenses can recognize between "friend" and "foe" and protect us from the myriads of invaders that can harm and even kill us. To be certain, the defense systems are rendered more or less effective according to our emotional responses to the stressors that we experience in the affairs of daily living.

In this matter, special interest may be placed on those whose work involves constant interaction with people. For example, ministers of religion, because of the nature of their profession, which involves working with a variety of personalities, often experience mounting tensions. These tensions may be channeled into anger, resentment, frustration, hopelessness and even fear. Sometimes a minister may go to the extent of absorbing a parishioner's negative emotions. This may result in declined effectiveness, paralysis of potential, destruction of relationships, and worst

of all, misdirection of vital energies. These may cause severe damage to the natural body defenses, producing illness and hindering him/her from achieving goals and objectives.

Negative emotional responses should be seriously dealt with because of their role in disease causation. While practices such as eating a balanced diet, getting adequate rest, and following a regular exercise regimen, have been promoted for counteracting stressors, we all need to understand that having positive attitudes in the face of life-related tensions and stresses will help the disease-fighting force to receive a worthwhile boost.