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The Biopsychosocial Model of Medicine: Implications for the Future of Healthcare

Presidential Scholar Senior Thesis

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Introduction

The science of medicine is changing at an incredible rate. New treatments, technologies, and biologically-based discoveries seem to occur almost daily. In fact, the health care business has evolved into the largest service industry in the United States, grossing more than \$1 trillion annually (Taylor, 2003). Despite the obvious attention paid to health-related issues in this country, is our health care system actually providing American citizens with the most efficient and effective care treatments possible? Do current medical practices have the best interests of the American public in mind, or are outdated philosophies being used to treat illnesses and diseases that are exceptionally diverse from those previously encountered? This paper serves to examine the current status of the American healthcare system by exploring a recently proposed model for medical reform, the biopsychosocial model.

Trends in health care have greatly evolved since the early 1900s. Not only have such extraordinary medical discoveries as penicillin, open-heart surgery, organ transplants, and cloning been introduced into the American medical culture since then (Fanu, 1999), but actual trends in life expectancy and mortality have also significantly changed. In 1901, for example, the life expectancy for a newborn was only approximately 49 years. By 1984, this had increased by over 25 years, to a new life expectancy of 75 years. Initially, much of this outcome was attributed to improved personal hygiene, better nutrition, increased medical knowledge, and improved public sanitation devices, such as water purification and sewage treatment facilities. After these preventive measures had been established, advancements in medical treatments enhanced living conditions further, increasing overall life expectancies for all American individuals (Sarafino, 1990).

Similar progress is also evident among death rate statistics. For example, during the year 1900, the top three leading causes of death were influenza and pneumonia, tuberculosis, and gastroenteritis, or the irritation and inflammation of the digestive tract, which causes nausea and severe dehydration. Conversely, the top three leading causes of death in 1998 were diseases of the heart, cancers, and cerebrovascular diseases, or strokes. Even more striking is the fact that neither tuberculosis nor gastroenteritis was ranked as one of the top ten causes of death in 1998. Additionally, the associated mortality rates from influenza and pneumonia had decreased almost 600% from 1900 to 1998, moving from first to sixth most likely to cause death at the turn of the century (Taylor, 2003). It can be inferred from this data that different patterns of illness and death have evolved over the past 100 years. Specifically, in the early 1900s, people died chiefly from gastrointestinal and infectious diseases. Today, however, the main cause of health problems and death in the United States is chronic disease directly related to lifestyle decisions such as eating, lack of exercise, smoking, and mechanisms used to cope with stress and other psychological disappointments. Ironically, however, the American health care system has not adopted modified treatment strategies to cope with these new health risks (Sarafino, 1990).

One reason for this is that the science of medicine has been guided by one theoretical model for the past 300 years: the biomedical model (Taylor, 2003). This paradigm is characterized by two assumptions: Materialism and reductionism. Materialism refers to the idea that individual existence can be summarized by the basic scientific principles of anatomy, biochemistry, and physics. Reductionism maintains that people can be assessed and medically understood by only examining their component parts (Snyder, 1989). Reductionism also diminishes the viewpoint of illness to a process that can solely be examined at the cellular level.

It utilizes only biological standards of measurement, instead of incorporating other factors such as social or psychological processes in its depiction of disease.

The biomedical model further implies a mind-body dualism, since only biological malfunctions and not social or mental processes are taken into account as disease-causing factors (Taylor, 2003). Specifically, the biomedical model “assumes disease to be fully accounted for by deviation from the norm of measurable biological (somatic) variables. It leaves no room within its framework for the social, psychological, and behavioral dimensions of illness” (Engel, 1977, pg. 130). Moreover, the biomedical model focuses on aspects that lead to illness and disease, instead of concentrating on preventive measures that may promote health. Thus, this model of medicine has many associated setbacks, especially when considering that the current leading causes of death are more closely related to lifestyle choices, which include both psychological and social sources, as opposed to the more biologically-based infectious diseases that plagued the population over one hundred years ago (Taylor, 2003).

A recent model has been proposed as an alternative solution to the inadequacies of the biomedical model. This model, termed the biopsychosocial model, was proposed in 1977 by a man named George L. Engel (Sarafino, 2003; Taylor, 2003). Engel proposed his model to serve as an alternate way of approaching medicine; one in which social, psychological, and biological processes are all considered when evaluating patients’ health problems and illnesses. As stated by Engel, “I contend that all medicine is in crisis and, further, that medicine’s crisis derives from the same basic fault as psychiatry’s, namely, adherence to a model of disease no longer adequate for the scientific tasks and social responsibilities of either medicine or psychiatry. Medicine’s crisis stems from the logical inference that since “disease” is defined in terms of somatic

parameters, physicians not need be concerned with psychosocial issues which lie outside medicine's responsibility and authority" (Engel, 1977, pg. 129).

To challenge the classical view of medicine, Engel proposed the canons associated with his biopsychosocial model of medicine. Simply stated, the biopsychosocial model takes into account the ignored dimensions of the biomedical model by incorporating psychological, social, and biological components in the explanation and treatment of disease (Engel, 1980). This view, in contrast to the biomedical model, allows for explanations of medical phenomena that can not be explained otherwise. For example, the biologically focused biomedical model can not account for the simultaneous presence of cell abnormalities and the corresponding lack of illness symptoms exhibited by a patient. Similarly, the biomedical model limits the reliability and importance of the patient's verbal account of symptoms and experiences of the disease or illness, for it focuses exclusively on physical findings and laboratory test outcomes. Moreover, the biomedical model ignores and underrates the importance of the physician-patient relationship, especially in terms of communication between the two parties (Engel, 1977). This model does not include the attributions and feelings of the individual, for it relies exclusively on physical information to determine disease pathologies (Engel, 1980). This disregard may be responsible for the perpetuation of the illness, especially the severity of symptoms (Engel, 1977).

Although the conceptual framework of Engel's biopsychosocial model seems valid and more inclusive than the biomedical model, scientific evidence must be confirmed before the model is completely accepted as an accurate approach to the treatment of health problems. Specifically, it must be proven that both psychological and social components are directly related to the course of illness and that, by incorporating these components, patients are more likely to experience fewer and less severe illness symptoms. This paper, therefore, will examine current

research data on psychological and social studies in addition to personal findings on the provider-patient relationship. Because these aforementioned categories are broad and extensive in nature, specific aspects of each will be examined. Psychological evidence for the potential efficacy of the biopsychosocial model of medicine will consist of an examination of the effects of stress and personality on health. Social evidence will be comprised of an assessment on the effects of social support groups on breast cancer patients. Finally, the physician-patient relationship will be examined for trends relating to the healthcare improvements proposed by Engel's biopsychosocial model of medicine. This particular investigation will incorporate a personal survey on the provider-patient relationship that exists among the athletic trainers and student-athletes at the University of Northern Iowa. The attitudes each group holds concerning the reasons why injuries perpetuate will be explored in some detail. After each aspect has been discussed, an overall conclusion evaluating Engel's suggestion for replacing the biomedical model of healthcare currently used in America with the biopsychosocial model of medicine will be addressed.

The Effects of Stress and Personality on Health

Everyone will experience the feeling of being stressed at some point during their life. It is the sensation of being stuck in traffic when one is already late for an important meeting. It is being pulled over by a police officer after speeding on the highway. Stress is also receiving a phone call from a hospital, learning a loved one has been brought into the emergency room. Whether it is due to pressures experienced in the workplace, at school, or in the home, the effects of stress are immediately noticed by the affected individual, especially if the particular strain is too overwhelming for the person to manage effectively. Although experiences with stressful

situations are easy to recall, what exactly is stress and what physiological and psychological changes does it cause to our bodies?

Stress is defined as evaluating certain events as being negative, harmful, taxing, or even threatening to an individual's ability to successfully respond through physical and mental means. Stress is caused by stressors, or events perceived to be stressful in some way (Taylor, 2003). Therefore, by definition, the effects of stress can be potentially damaging and detrimental to the health of an individual. Consequently, the way in which individuals cope with and perceive stress can impact their overall wellbeing.

Another characteristic varying among individuals is personality. Personality is defined as an independently consistent way in which behaviors, expressions, and actions are exemplified by an individual (Taylor, 2003). Some people are shy and do not like to interact with large groups of people with whom they are not formally acquainted. Others are more daring and outgoing, desiring to often interact with and meet new people. Still others are both withdrawn and extroverted, depending on the particular situational circumstance. Can these individual differences among people, however, actually affect the way in which our bodies physiologically and psychologically respond? More specifically, can personality, similar to a sustained mood, affect our susceptibility to certain illnesses and diseases?

This paper will address the evolutionary reasons for bodily reactions to stress, along with other contemporary explanations for its sustained existence. The physiological and mental bodily changes that accompany the universal experience of stress will be examined. Additionally, the individual effects of mood and personality on health will also be discussed, especially the specific characteristics and behavioral tendencies designated as most likely to increase susceptibility to health-related problems.

The Theoretical Explanations for the Purpose of Stress

Evolutionary Rationalization

Stress originated as a means by which an organism could be aroused by potential threats, such as a predator or an abrupt change in weather conditions. In this sense, it was biologically beneficial for organisms to have the ability to perceive stress, for it allowed them to react accordingly to dangerous situations. When stimulated by stress, organisms could quickly respond to a danger, lessening their chances of being injured or killed. These stressors evoked a fight-or-flight response, caused by rapid arousal of the sympathetic nervous system. The organism would therefore be prepared to attack or escape. As a result, a stressful arousal can be adaptive because it enables an organism to quickly react to an unsafe or dangerous circumstance (Taylor, 2003).

Another way in which the function of stress is explained is through Hans Selye's General Adaptation Syndrome (1956). This concept, although not as widely accepted as the fight-or-flight explanation, states that when an organism encounters a stressor, it prepares for action. This action, however, is nonspecific for the particular stressor. This means that, regardless of the perceived threat, the organism will respond with the same overall physiological reactions. Additionally, if these reactions are maintained or prolonged for extensive periods of time, the organism will become fatigued and will not be able to ward off the effects of the stressor with the same physiological strength it once utilized. There are three phases to this theoretical explanation for the existence of stress. The first phase, alarm, occurs when the organism becomes alert and ready to respond to a threat. Resistance is the second phase, and it involves the ongoing efforts made by the organism to cope with or resist the threat. The last stage, exhaustion, occurs when the organism can no longer overcome the threat, thereby diminishing its responsive resources (Taylor, 2003).

Although the General Adaptation Syndrome provides an enlightening depiction of the purpose and methodology of the body's response to a perceived stressor, it has also been extensively criticized by other researchers, including R. S. Lazarus, who founded the primary appraisal explanation of stress, which will be discussed later. One limit of the explanation is that it does not assign much weight to the psychological factors involved in the perception of stress. Another weakness is the assumption that all stresses are dealt with uniformly, which does not account for differences in responses among people with various perceptions and personalities. Lastly, Selye's explanation defines stress as an outcome to a stressful event, although stress can occur both before and during a stressful occurrence (Taylor, 2003).

The preceding theories are the most commonly accepted descriptions for the purpose of the perception of stress. Both provide evolutionary evidence for the adaptive possibilities that sensitivity to stress may have had on organisms' ability to survive. There are also more recent accounts of the associative purposes of stress responses, which will now be highlighted.

Modern Associations of the Stress Response

One current area of interest in the study of reactions to stressful encounters is the affiliation response (Taylor, 2003). Besides fighting or fleeing in response to a stressor, groups of organisms can collectively respond through association. This phenomenon can be seen when animals herd together to escape an attacking predator, or when children huddle together when frightened by a thunderstorm. This occurrence has been called the "tend-and-befriend" response, and it maintains that female organisms, as compared to males, more frequently display this type of reaction when faced with a threatening condition. This behavior may be evolutionarily linked to the protection of offspring, and may subsequently be projected to the assumed need for women to be supported by others in times of stress (Taylor, 2003).

Another hypothesis for the process by which individuals respond and react to stress is described by Lazarus' primary and secondary appraisal process (1968). When a person is first confronted with a stressor, a primary appraisal process is used to determine the actual meaning of the incident. This is when individual perceptions and personalities can play a major role in the coping strategies employed by the person and either lessen or exacerbate the effects of the potential stress (Taylor, 2003). For instance, consider a person who has just won the lottery. For many people, this occasion would give rise to elation and very little amounts of stress. However, some people may view this as an extremely stressful event, especially when considering the number of family members and organizations who will now be approaching them for contributions from their newly acquired money. Therefore, depending on the individual attitudes, opinions, and personality traits of a person, stressors may be viewed as negative, positive, or neutral in terms of stress association.

After the primary appraisal has occurred, the secondary appraisal process begins. This step involves the evaluation of one's resources and coping abilities, and the determination of whether or not these resources will be sufficient to meet the demands of the event. If the abilities of the individual are greater than the challenges posed by the threat, then the person will experience relatively little stress or adverse effects. Conversely, if the individual's resources are insufficient for fighting against the potential dangers of the hazard, then a considerable amount of stress will more than likely be experienced. If this aroused state is maintained for a long period of time, then the allostatic load, or the long-term costs of perpetual stressors, may build up. Specifically, the allostatic load is defined as the "accumulating adverse effects of stress, in conjunction with preexisting risks, on biological stress regulatory systems" (Taylor, 2003, pg. 524). These extreme demands can easily result in systemic malfunctions, resulting in illness

(Taylor, 2003). It has now been established that both reactions to stress and personality characteristics can influence the health of an individual, both positively and negatively. However, the specific behaviors, along with their affiliated effects, have yet to be described in this paper.

The Effects of Stress on Health

Current research examines the effects of stress on health in two distinct ways: 1) by assessing the symptoms of healthy individuals who are intentionally exposed to harmful pathogens, in accordance with their perceived amounts of stress; and 2) by examining large samples of people for susceptibility to individually-acquired illness based upon their reports of recent stressful events. Results from both types of studies have been found to be conclusive.

Effects of Stress on Intentionally Infected/Wounded Participants

The more stress perceived by an intentionally infected/wounded participant, the greater the frequency of infections and illness symptoms. One study (Marucha, Kiecolt-Glaser, & Favagehi, 1998) examined the correlation between the amount and severity of perceived stress and the healing rates of inflicted oral cavity wounds. Healthy dental students at the Ohio State College of Dentistry volunteered to have standardized mucosal wounds placed upon their hard palates on two different instances. The first wound was inflicted during summer break, when no classes were in session. The second wound, inflicted six weeks later, was administered three days before the first major examinations of the fall semester. For each day during both trials, participants reported their levels of perceived stress by answering specific survey questions. Additionally, either the size of the wound or the rate of wound healing was also microscopically measured daily by the researchers. No students in the study healed as quickly during their week of examinations as they did during summer vacation. More specifically, the wounds administered before the week of academic testing, when the individual reports of stress were highest, were

found to heal 40% slower than those given during break. These results indicate a direct correlation between the amount of perceived stress reported by the students and their healing rates: The more stressed the students felt, the slower their bodies were able to recover and heal from the inflicted wound (Marucha, Kiecolt-Glaser, & Favagehi, 1998).

A second study also confirmed delays in wound healing due to extensive psychological stress. Mice subjected to invasive restraint stressors and then afflicted with dorsal wounds were observed for rates of infection and wound healing for a period of two weeks. Compared to a control group, mice exposed to stressful environmental situations had the greatest susceptibility to bacterial infection. Additionally, these mice had significantly reduced rates of wound healing, demonstrating the disruptive effects stress can have on the maintenance of bodily homeostasis (Rojas, Padgett, Sheridan, & Marucha, 2002). Although the findings of this study are important in health research, the results can not be assumed to directly correlate with the physical effects of stress experienced by humans.

Other intentional participant subjections to viruses have also shown a positive relationship between the amount of reported stress and the rate of infection. One study (Cohen, Tyrrell, & Smith, 1991) examined the effects of deliberately exposing healthy individuals with variant degrees of stressful sensitivities, to an infectious dosage of a respiratory virus. Approximately 400 healthy participants were given nasal drops containing one of five highly contagious respiratory viruses. After being quarantined for one week after the exposure to the virus, the overall associative effects from stress, as indicated by the participants through questionnaires, were compared to subsequent rates of infection. Participants who were highly stressed according to survey scales, were more likely to acquire a cold in the week following their initial exposure to the virus. The rates of infection increased with higher stress index scores.

After controlling for other potentially confounding factors, such as drinking, smoking, and sleeping, only stressful life events were reliably correlated with increased susceptibility to colds. The relationship between stress and illness was attributed to an increased rate of infections among participants scoring higher on stress index scores, not to an increase in the number of clinical colds among infected participants. That is, some people, although infected with the virus, did not display any resultant symptoms. Specifically, the amount of perceived stress and negative life events were positively associated with greater rates of clinical illness, as objectively assessed by physician diagnosis, body temperature measurements, and the weight of tissue mucus obtained daily from each participant's room. Therefore, this study suggests relationship between amounts of psychological stress and biologically confirmed infectious disease courses. Overall, stress can modify and moderate human immune system performance. Additionally, this study supports the generality of the effects of stress, since the infection rates among participants receiving the five variant virus strains did not differ from one another (Cohen, Tyrrell, & Smith, 1993; Cohen, Tyrrell, & Smith, 1991).

Methodologically similar studies assessing the susceptibility of participants to influenza A viruses and hepatitis B vaccinations have also shown negatively correlated effects between high degrees of perceived stress and improved immune system responses. A study of healthy adults subjected to the influenza A virus revealed that participants with higher psychological stress survey scores reported more illness symptoms, greater mucus weights, and higher immune system responses in collected blood samples than those who did not report extensive feelings of stress. These observations provide supplementary evidence for the ability of psychological stress to adversely influence biological function (Cohen, Doyle, & Skoner, 1999). Similarly, a study examining the effects of psychological stress on individual immune system responses to the

administration of a hepatitis B vaccination found participants with the highest levels of negative affect and psychological stress reports to show the lowest antibody responses to the vaccine. This finding, which illustrates the variability among individual immune responses, raises the possibility that differences in the expression of personality traits may be a moderating factor in the relationship between stress and disease (Marsland, Bachen, Cohen, Rabin, & Manuck, 2002). In summary, a common finding among deliberate exposure studies supports a strong correlation between the amount of perceived stress reported by participants and their subsequent detriments in immune system functioning.

Effects of Stress on Health in Populations with Uncontrolled Exposure

To examine the effects of stressors on health and immune system response, participants do not have to be purposely exposed to harmful bacteria or viruses. Instead, large samples of people may be examined and the relationship between reported stress and the frequency of illness within the population can be scrutinized. Although this type of study does not offer as much control as studies with deliberate, uniform exposure, it does, however, provide a more realistic representation of the actual course of illness experienced by the general public.

One study of this nature (Eysenck, 1993) examined the mortality rates of 2,146 participants for fifteen years after their initial research involvement. Volunteers completed surveys regarding their typical amounts of daily stress and questionnaires concerning characteristic behaviors and personality predispositions. The participants who originally reported the highest amounts of perceived stress and negative affect had a significantly higher rate of mortality from cancer and coronary heart disease than did those with the lowest stress self-reports. This research provides evidence for the predictability of mortality based on levels of stress and negative coping characteristics (Eysenck, 1993).

Correspondingly, a study examining the relationship between distress and perceived health status on the course of illness in HIV patients also exemplifies the negative correlation between increased stress and symptom reduction. Homosexual men infected with the HIV virus completed questionnaires regarding their perceptions of stress, distress, and locus of control with respect to the progression of their disease. Specifically, locus of control refers to an individual's perception of what controls their life. If the individual possesses an internal locus of control, they believe their own actions are solely responsible for the outcomes of their life. An individual with an external locus of control would view such things as fate, luck, destiny, society, or some other factor out of their control as in charge of the occurrences they experience in life (Taylor, 2003). The men who reported the lowest scores on locus of control scales, in addition to the highest scores of stress and distress, were the patients who had the greatest incidence of depression and feelings of hopelessness. Furthermore, the severity and progression of symptoms associated with the HIV virus were greatest among these men (Evans, Ferrando, Rabkin, & Fishman, 2000). Again, this study confirms a positive association between high levels of perceived stress and increased adverse health symptoms. The sexual orientation of these participants, although more than likely an inconsequential factor in the obtained results, should be viewed as a potential confound if these results are projected to more generalized populations.

Overall, an extensive amount of evidence exists for the correlation between high levels of perceived stress and detriments to physical health. Regardless of whether participants were intentionally exposed to infectious agents or not, those who experienced the greatest amounts of cumulative stress were also the most likely to exhibit pronounced deficits in immune system performance. These findings will now be compared to the effects individual personality variables have on health symptoms.

The Effects of Personality on Health

Studies investigating the effects of personality on illness and susceptibility to infection have demonstrated that individuals with greater displays of negative affect are more likely to have impaired immune system responses than people with more optimistic attitudes and behavioral tendencies (Marsland et al., 2002; Eysenck, 1993). Although this finding does not completely explain all instances of sickness, it does provide an interesting and accurate insight into the characteristics of individuals who have a higher degree of vulnerability to illness.

A study performed on the correlation among extroverted behaviors, popularity, and the prevalence of illness symptoms, found that participants who had the largest social networks and greatest self-reports of negative life stressors were most likely to become ill. Of the 115 participants, those who displayed the greatest extroversion behaviors, defined as time spent in social interactions, were the most likely candidates to acquire an upper respiratory infection (Hamrick, Cohen, & Rodriguez, 2002). Although this study provides evidence for the increased susceptibility of experiencing high degrees of stress and experiencing present illness symptoms by socially active people, this finding may also be due to the increased chance of pathogen contact caused by involvement in extensive social networks.

A more comprehensive finding was obtained through a meta-analysis study reviewing the personality traits of individuals most prone to acquiring disease. An examination of 229 research studies specifically examined the personality traits of anger and hostility, aggression, depression, extraversion, anxiety, and their correlated effects on health. Higher levels of anger, hostility, aggression, depression, and anxiety were significantly associated with a greater likelihood of acquiring heart disease. Among the traits examined, depression was the most predictive for the symptomatic expression of heart disease, especially through the incidence of heart attacks. This

review provides extremely convincing verification that an association exists between illness and chronic psychological distress. It also challenges the concept that certain “disease-prone personalities” exist. Rather, the compilation of these individual studies indicates negatively associated personality traits and behaviors, such as anger, depression, and hostility, can increase the likelihood that an individual will be more susceptible to any disease, not to one specifically, thereby calling in to question the existence of a particular “disease-prone personality” (Friedman & Booth-Kewley, 1987).

Lastly, a study exploring the effects between disease susceptibility and personality traits as specific motives for alcohol consumption also found positive correlations among certain behavioral traits and the increased probability for acquiring cancer and heart disease. A longitudinal study of 1,706 men was completed for thirteen years in Heidelberg, Germany. Participants answered questionnaires concerning stressful life events and drinking habits in relationship to their personality tendencies. Without taking into account alcohol consumption, men who reported higher degrees of stress were over 20% more likely to die from cancer, coronary heart disease, or another cause of death than were those who reported fewer instances of stressful experiences. Specifically, 85% of the low-stressed men were still alive when the follow-up assessment was completed thirteen years after the initiation of the study, as compared to only 60% of the men who were highly stressed. Furthermore, the personality traits reported by the participants as reasons for drinking were also found to correlate with mortality. Men who drank to ease feelings of sorrow, grief, trouble, or tension, were significantly more likely to die from cancer than those who drank for pleasure. The men who drank due to inability to cope with problems or sorrow reported greater anxiety, tension, low self-esteem, insecurity, and difficulty communicating with others (Grossarth-Maticek & Eysenck, 1991). This study once again

presents evidential support for the correlation among specific negativistic personality characteristics and proneness to disease and immune system malfunctions.

Individual personalities characterized by negative behaviors and affect such as anger, hostility, and depression, are those most likely to be correlated with the highest rates of illness and disease symptoms. Additionally, repeatedly exhibiting any of these adverse traits can influence individual susceptibility to almost every disease. Therefore, prediction of outcomes for disease vulnerability among individuals lacking optimistic outlooks and active coping behavioral tendencies can be accurately made.

Conclusions

As individual perceptions of stress increase, rates of infection and other symptoms of immune system insufficiencies also rise correspondingly. Although bodily arousal from stressors has an important homeostatic role in preventing harm and readying physical and psychological reaction mechanisms, a sustained exposure to an overwhelming stressor can have extremely adverse effects on health. Specifically, many studies have found a correspondence between high rates of perceived stress and slower rates of wound healing (Marucha et al., 1998; Rojas et al., 2002). Connections have also been established between higher rates of psychological distress and increased diagnosis of viral infections (Cohen et al., 1993; Cohen et al., 1999; Marsland et al., 2002). Most importantly, disease symptoms and mortality rates have also been identified as factors affected by increased amounts of stress (Eysenck, 1993; Evans et al., 2000).

Various personality traits demonstrated by individuals, especially negative affect, are also related to modifications in physiological and psychological welfare. Particularly, reports of regular feelings of anxiety, depression, anger, and aggression have been shown to increase susceptibility to illness and disease, especially heart failure (Friedman & Booth-Kewley, 1987).

Furthermore, lack of efficient coping strategies as revealed through the expression of anxiety, tension, and low self-esteem, has also been paired with increased mortality rates, especially for coronary heart disease and cancer (Grossarth-Maticek & Eysenck, 1991). Therefore, a substantial amount of evidence exists for the correlation between dysfunctional personality styles and the rate of disease acquisition.

These findings have many implications, especially for the potential for enhancing the current status and treatment efficiency of the American health care system. If the effects of stress can have such an impact on the health of individuals, then preventive practices should be implemented to curtail potentially devastating problems before they begin. For instance, widespread involvement in programs aimed at reducing stress should be emphasized. These may range from participation in an exercise program to weekly trips to steam baths or spas. Educational information on the effects of stress on the body, especially in correspondence to harmful personality traits, should be widely published. Additionally, school programs and treatment regimens should offer instructions and guidelines for learning how to more effectively cope with the effects of stress. Specifically, stress-related health behaviors have important implications for the recovery rates of surgery patients (Marucha et al., 1998; Rojas et al., 2002) and individual reactions to vaccinations (Marsland et al., 2002). Because everyone experiences stress, money channeled towards this particular area of health would be well spent and, in turn, the preventive measures it popularizes could actually save money and increase overall societal productivity in the long run.

Limitations to these studies do exist, however. For example, the details of the immune system and stress-arousal mechanisms involved are not entirely known, so the exact effects stress may cause can not be determined with certainty (Maier, Watkins, & Fleshner, 1994). Also, much

of the evidential support existing for this topic is based upon the self-reports of participants. These measurements can never be completely objective and can reflect social desirability problems (Eysenck, 1993), as well as memory difficulties in recollecting past events. Additionally, the survey measurements used in these studies are not standardized, making generalizations less reliable across studies.

To improve upon current understandings of the effects of stress on health, future research should be aimed at determining which personality styles lead to a greater general susceptibility to all illnesses and diseases, instead of focusing on the courses of certain ailments (Friedman & Booth-Kewley, 1987). To strengthen evidential support, testing should also be expanded to include wider representations of demographically and culturally distinct individuals (Cohen et al., 1991). Finally, more research is desired to identify the relationship between stress and other factors found to compromise disease resistance, such as age and depression (Hamrick et al., 2002).

The potential for stress-reducing practices and methods in preventing commonly acquired health problems in this country is virtually infinite. Stress is a universally experienced occurrence, so any type of intervention would positively affect a large population of people. Because the effects of prolonged stress are strongly correlated with detriments in health, preventive measures need to be expanded so that more individuals can benefit from a better understanding of how to effectively cope with stress. Moreover, individuals need to pay greater attention to dysfunctional behavioral tendencies, for these too can compromise health. Introspective examinations should be encouraged so individuals can better understand their personality propensities and, therefore, can become more aware of any potential for increased

illness susceptibility. Overall, greater attention needs to be paid to both psychological and physical stressors as essential factors in the comprehensive status of an individual's well-being.

The Effects of Support Groups on Breast Cancer Patients

Cancer is currently the second leading cause of death in the United States and over 13 million Americans have at one time been diagnosed with the disease (Taylor, 2003). Recent estimates predict that one-third of the children born after 1999 will acquire cancer at some point during their lives. Cancer, the uninhibited growth of body cells, begins after a seemingly normal cell starts to grow uncontrollably, forming a mass of cells called a tumor. These tumors continue to expand, and may even spread throughout the body, forming new tumors in different locations. This translocation of cells from their origin is called metastasis. Cancer is caused by genetic predispositions and carcinogens, or any agent believed to alter the DNA of a cell so it will not be able to control its own cell division. Many known carcinogens exist, including pesticides, cigarette tar, asbestos, paint, and UV light exposure (Raven & Johnson, 1999).

The most common cancer contracted by women in the United States is breast cancer (Taylor, 2003). The American Cancer Society stated in 1996 that 12% of women in America will be diagnosed with breast cancer (Alpers et al., 2004); more recent estimates assert that around 175,000 new cases of the disease are diagnosed each year (Targ & Levine, 2002), making interventions to reduce prevalence and improve coping with the disease a major medical priority. Although early detection strategies and enhanced technological advancements in medicine have improved recovery rates and prognosis in breast cancer patients (Stein, Hermanson, & Spiegel, 1993, cited in Gore-Felton & Spiegel, 1999), modern medical practices can cause immensely problematic side effects, including "chronic fatigue, loss of sexual functioning and desire, neuropsychological impairment, gastrointestinal dysfunction, and immunosuppression"

(Loescher, Welch-McCaffrey, Leigh, Hoffman, & Meyskens, 1989, cited in Gore-Felton & Spiegel, 1999, pg. 275). Additionally, psychological struggles such as suppression of anger, anxiety, depression, fear, and hopelessness may be experienced (Stevens & Duttlinger, 1998).

One widely practiced treatment used to ease both the physical and psychological effects of living with cancer is the support group. Its original purpose was to provide breast cancer patients with a discussion-based emotional and psychological outlet, where group unity could be achieved through sharing concerns and feelings with women who were experiencing similar concerns. According to one breast cancer support group participant, “The group is a place to really get all your feelings about cancer out there, a safe place, where you won’t be rejected, a place to say whatever you want” (Giese-Davis et al., 2002, pg. 922).

Since the first traditional “talking” group intervention (Targ & Levine, 2002), breast cancer support groups have evolved into a broad spectrum of treatment options, techniques, and goals. This paper reviews the overall purpose and theoretical reasoning behind the use of social support groups. It also identifies the different styles of support groups now available for breast cancer patients, along with reported success rates for women of varying ethnicities and emotional predispositions.

Social Support Group Functions

General Objectives

Support groups, despite differences in structure and/or regulation, all have standardized features. The key components of every support group include small group interactions comprised of individual participation, voluntary attendance, promotion of emotional release, and a consensus among participants of the actual purpose of the group (Taylor, Falke, Shoptaw, & Lichtman, 1986). In addition, support groups share one common goal: to provide social support

to participants, regardless of their social support networks outside of the group. Social support is generally defined as an interaction between people, promoting emotional concern, physical aid, positive appraisal, and the sharing of information (Taylor et al., 1986). Support of this nature can arise from parents, siblings, husbands or wives, children, friends, and even healthcare professionals. The overall purpose of each support group therefore is to foster social support through a secure, constructive environment.

Theories of Social Support

There are currently two theories attempting to explain the benefits of social support during stressful situations. The first hypothesis, termed the “direct effects hypothesis,” states that social support is beneficial at all times, whether stress is being experienced by the individual or not. The second theory, the “buffering hypothesis,” maintains that the physical and psychological benefits attained through social support are essentially evident during stressful circumstances. According to the latter theory, social support can act as a resource to dull the effects of stress or it can also allow for better coping strategies when stress levels are high (Taylor et al., 1986). Regardless of the actual influence and pathways by which social support moderates the effects of stress, social support groups are designed in numerous ways to capitalize on its associated benefits.

Styles of Social Support Groups

Current social support groups, especially those developed for breast cancer patients, are extremely diversified. Today, a woman with breast cancer who wishes to join a social support group has options. She can decide among group leaders with various backgrounds and qualifications, treatment protocols of diverse natures, and group durations of varying lengths. The results and effectiveness of these categorically distinct groups will now be discussed.

Social Support Group Leaders

Three different types of leadership are utilized in breast cancer support groups. Traditionally, most groups are professionally led by physicians, psychologists, or psychiatrists. Social support groups may also be led by volunteers, many of whom have had breast cancer themselves. More recently, internet groups have surfaced, allowing sick women to receive the benefits of participating in a support group from the comfort of their home. The psychological improvements resulting from these various groups, as reported by the participants, are somewhat different, however.

Support groups led by trained professionals are frequently beneficial to breast cancer patients in terms of psychologically measured improvements. One of the largest professionally-led breast cancer support group studies conducted examined 125 women with metastatic breast cancer in the San Francisco Bay area (Butler, Koopman, Classen, & Spiegel, 1999). The study, which examined the effects of participating in a social support group led by psychiatrists, psychologists, and social workers for a duration of one year, was actually evaluated by three different research teams. For each co-study, participants answered questionnaires regarding their emotional feelings, mood changes, levels of stress, self-esteem, and perceived support from friends and family members.

The first co-study published (Butler, Koopman, Classen, & Spiegel, 1999) found that women who participated in the breast cancer support group experienced clinically significant improvements in their likelihood of committing intrusive and avoidant conduct behaviors typical of cancer patients, such as avoiding invasive treatments like chemotherapy, as compared to breast cancer patients who did not participate in the support group. Greater perceived social support networks outside the support group, such as support received from friends and family,

were also associated with fewer avoidance symptoms. Similarly, in the second co-study, support group participants demonstrated lower trauma symptom scores on the Impact of Event Scale questionnaire (1979). In addition, after a follow-up assessment given one year after the termination of the support group, social support group participants reported not only lower traumatic symptom scores, but also lower mood disturbance scores on the Profile of Mood States questionnaire (1971), than women with breast cancer not enrolled in the support groups (Classen et al., 2001). Lastly, the results of the third co-study were comparable to the two previously published studies. Women in support groups reported lower emotional suppression scores on the Courtauld Emotional Control Scale questionnaire (1983) and higher social restraint scores on the Weinberger Adjustment Inventory questionnaire (1990) against aggressive and impulsive behaviors towards others (Giese-Davis et al., 2002). It should be noted, however, that the women in these support groups individually chose to participate; their reported scores could thus reflect, to a degree, the characteristics of a more psychologically needy sample of breast cancer patients.

Other studies conducted on breast cancer support groups led by professionals report similar conclusions. In a study of 235 women with metastatic breast cancer (Goodwin et al., 2001), participants completed surveys regarding pain, suffering, and mood states after year-long meetings led by psychiatrists, psychologists, social workers, and nurse clinicians. These support group participants reported less pain, mood disturbance, tension, anger, hostility, confusion, and depression than non-participants. Interestingly, women who also reported the most distress before support group participation additionally reported the greatest improvement in physical and psychological scores on the Profile of Mood States questionnaire (1992) after their year-long involvement. Women who were least distressed before the study began did not show any significant improvement in emotional functioning; indicating women with the highest degrees of

initial stress and discomfort may receive the most assistance from social support group participation (Goodwin et al., 2001).

This finding was mirrored in a study conducted by Helgeson, Cohen, Schulz, and Yasko (2000). Women who reported the lowest perceived control scores before their support group interventions improved the most in terms of survey scores revealing familial social support, self-esteem, and quality of life measurements, such as pain and social functional difficulties. The 230 women in the study, led by oncology nurses and social workers, participated for only eight weeks, highlighting the immediacy with which improvements can be established through membership in social support groups.

Another study reflecting positive outcomes for breast cancer patients participating in professionally-led support groups showed improvements in anxiety, emotional distress, helplessness, depression, and spiritual welfare survey scores for partakers (Targ & Levine, 2002). Women participating in support groups improved scores measured by the Profile of Mood States questionnaire (1981) and the Principles of Living Survey (1997), more than the breast cancer patients not enrolled in support groups. This twelve week study, which followed 181 breast cancer patients enrolled in support groups headed by nurses and clinical social workers, exhibits some of the most statistically compelling evidence for the ability of social support groups to positively change the quality of life of breast cancer patients. This finding, however, has not been replicated in all professionally-led breast cancer support groups.

One study which examined the long-term follow-up effects of an eight week long support group led by trained dieticians and social workers as group leaders, found that breast cancer participants did not report any benefits from membership in a peer discussion group (Helgeson, Cohen, Schulz, & Yasko, 2001). Although improvements in vitality were noted at the end of the

support group sessions as measured by the SF-36 Health Survey (1993), surveys given three years after treatment revealed no significant maintenance of this improvement. It should be noted, though, that group members in this study did not have metastatic cancer and that an educational group formed as an alternative to the peer discussion group was associated with psychologically favorable results, such as improved social and physical functioning.

Overall, the physical and psychological difficulties encountered by women diagnosed with breast cancer seem to improve by joining a social support group led by trained professionals. Although not every study has reported solely positive outcomes, a general improvement in life capabilities and self confidence was noted across most studies. These findings need to be compared to two other types of breast cancer social support groups: those led by volunteers, and those established through the internet.

Although not as broadly used as the professionally-led support group, social support groups directed by peer group leaders have also been associated with advantageous outcomes in breast cancer patients. One of the most intriguing volunteer-led support group studies occurred in Canada. There, the Canadian Cancer Society has established a program entitled Reach to Recovery, which pairs newly diagnosed breast cancer patients with volunteers who have lived through their own bout with breast cancer. In a study conducted by Ashbury, Cameron, Mercer, Fitch, & Nielsen (1998), 175 participants answered telephone questionnaires regarding their social and emotional support, as well as their overall well-being and quality of life. Women who participated in the one-to-one Reach to Recovery program reported score increases in social support and relationship satisfaction with physicians as measured by the Duke-UNC Functional Social Support Questionnaire (1988). Improvements in quality of life measurements were also noted, although they were not as significant.

A second study involving the leadership of non-professionals exhibited positive changes among breast cancer patients. A study of 20 self-help groups in the Shanghai Cancer Rehabilitation Club in China, consisting of a total of 449 breast cancer patients, revealed participants gained self-confidence, hopefulness, emotional control, and more favorable outlooks on life as measured by a researcher-administered questionnaire (Mok, 2001), as opposed to breast cancer patients not enrolled in social support groups (Mok, 2001). These optimistic treatment results are also identifiable in internet support groups.

Finally, internet support groups, although less scrutinized due to their recent technological availability, promise similar aid to women diagnosed with breast cancer. In a research study performed on the effectiveness of sharing breast cancer information on the internet, participants' loneliness and depression scores on the UCLA Loneliness Scale (1996) and the Center for Epidemiologic Studies Depressed Mood Scale (1971) decreased over a two month trial, while feelings of belonging and self-esteem increased (Fogel, Albert, Schnabel, Ditkoff, & Neugut, 2002). A total of 188 women with breast cancer and home internet access in the New York City area completed surveys on their levels of stress, depression, loneliness, and coping capabilities before and after internet use for health information. Findings were not dependent on the amount of time spent on the internet, for participants who spent as little as one hour a week online reported similar improvements to participants spending more time on the internet. It should be noted, however, that this study did not include women over the age of 65 due to researcher apprehension concerning their ability to obtain internet access. Additionally, a structured support group was not organized for the participants, but online chat groups were utilized by many of the women.

In an online breast cancer support group pilot study, the psychological effectiveness of joining an internet support group was found to improve feelings of optimism, anxiety, anger, and sadness, as recorded by a computerized program that categorized dialogue keywords between members (Alpers et al., 2004). A new software program, the Linguistic Inquiry and Word Count program, was invented to keep track of the number of predetermined positively and negatively associated keywords breast cancer patients use during their online conversations with one another. Research has shown the computer program, although at a disadvantage for its inability to take into account the context of human communication, scored reasonably well as compared to human reader scores. This study not only demonstrates the potential for improvements in breast cancer patients' well-being through internet support groups, but it also offers a promising strategy to determine the degree and rate of such improvement at any given time interval.

Despite differences in kinds of leadership, the overall success of breast cancer social support groups is notable across many research studies. In general, support groups led by professionals, volunteers, or conducted over the internet, have shown social, psychological, and physical improvements in the function of breast cancer patient participants. The tendency for breast cancer patients experiencing the most traumatic stress from their disease to show the greatest amount of psychological improvement was also noted in several studies.

Social Support Group Treatment Protocols

As the social support group expanded in popularity from its first induction, so have the types of treatment strategies available for breast cancer patients. Currently, three support group protocols are employed: Supportive-Expressive Therapy, peer discussion intervention, and educational/informative intervention (Gore-Felton & Spiegel, 1999). The particular aspects and

components of each of these distinct therapeutic procedures will now be explored, along with their reported significance in alleviating the detrimental effects on women with breast cancer.

Supportive-Expressive Therapy (SET) is an “existentially based therapy that developed out of Irvin Yalom’s work” (Serlin, Classen, Frances, & Angell, 2000, pg. 4). The four concerns of freedom, isolation, death, and meaningless, highlighted in one of Yalom’s books, are the heart of the SET intervention. The goal of SET is to create an emotionally safe environment where patients will feel comfortable enough to express their true feelings without facing ridicule or embarrassment (Serlin et al., 2000). This type of therapy promotes the exchange of support amongst group members, which is apparent by the encouragement given to group members to meet outside regularly scheduled meetings. Another unique feature concerning this procedural technique is the use of self-hypnosis at the end of each session to promote individual pain management and redirect negativistic perspectives (Gore-Felton & Spiegel, 1999). Supportive-Expressive Therapy is now extensively used as a treatment option for breast cancer patients, and its results are noted throughout many studies.

Evidence for the beneficial use of Supportive-Expressive Therapy as a treatment protocol in support groups is widespread. Breast cancer patients who participated in SET social support groups improved upon preliminary scores of intrusion and avoidance tendencies (Butler et al., 1999), levels of traumatic symptoms and mood disturbance (Classen et al., 2001), and levels of emotional suppression and outbursts of impulsive and aggressive behaviors (Giese-Davis et al., 2002), as compared to breast cancer patients who were not partaking in a support group. These findings are results obtained from measurements taken on the Impact of Event Scale questionnaire (1979), the Profile of Mood States questionnaire (1971), the Courtauld Emotional Control Scale questionnaire (1983), and the Weinberger Adjustment Inventory questionnaire

(1990), respectively. These findings, involving the responses of 125 women, are replicated in other SET studies.

In a study conducted by Goodwin et al. (2001), metastatic breast cancer patients who answered questionnaires before and after their year-long SET intervention program, reported less pain, mood disturbance, depression, tension, anxiety, anger, and confusion after treatment than non-participants. The actual survival rate of the patients, however, did not improve through participation in the group. Similar psychological assistance was also reported in a study utilizing SET not only for cancer patients, but also their families (Magen & Glajchen, 1999). Patients participating in the support group therapy reported fewer distressing, depressive, and obsessive-compulsive symptoms after the duration of the intervention. These results, however, incorporate cancers other than breast, so caution must be applied when considering the findings.

The research findings for peer discussion support group interventions involving leader-supervised conversations among group members are not as favorably associated with health benefits as the SET treatment regimes (Helgeson et al., 2001). Long-term benefits of a peer discussion group for breast cancer patients, as reported by a sample of 252 women, were not confirmed (Helgeson et al., 2001). In fact, the peer discussion group caused a short-term negative vitality survey score among the women, as measured by the SF-36 Health Survey (1993). This effect disappeared three years after the conclusion of the study but, overall, the peer discussion group was no more beneficial than a control group not allowed to discuss their cancer-related problems with other cancer patients.

In contrast with the previous study results, another peer discussion support group intervention only provided positive benefits for women who were initially the most psychologically distressed (Helgeson et al., 2000). Only breast cancer patients who had the

lowest preliminary survey scores on the Vaux, Riedel, and Stewart Scale (1987) reported improvements in social support and self-esteem scores after the duration of the treatment. Women who declared adequate emotional social support before joining the group treatment actually reported their spousal support levels decreased by the end of the study. This may be due in part to their husbands' feelings of inadequacy in providing social support; the women have another source of support through support group membership. These treatment results are incongruent with findings concerning educational/informative support group interventions.

The majority of educationally-based breast cancer support group treatments, which only provide patients with medically informative references concerning breast cancer, are quite helpful in alleviating the mental and physical burdens often associated with such a diagnosis. Informative intervention can enhance social support and self-esteem and improve feelings of loneliness (Fogel et al., 2002). Additionally, it is also linked to enhanced vitality, social functioning, and a decrease in physical pain symptoms (Helgeson et al., 2001). As used as a control group against more extensive treatments such as group sharing and hypnosis, the educational group equally matched the survey scores of more complex treatment programs in terms of self-efficacy and repression (Giese-Davis et al., 2002), traumatic stress symptoms (Butler et al., 1999), and mood disturbance (Classen et al., 2001). Again, these findings are results obtained from measurements taken on the Impact of Event Scale questionnaire (1979), the Profile of Mood States questionnaire (1971), the Courtauld Emotional Control Scale questionnaire (1983), and the Weinberger Adjustment Inventory questionnaire (1990).

Research findings (Gore-Felton & Spiegel, 1999) suggest the best treatment option, for the most comprehensive improvement in disease-related symptoms for breast cancer patients, is SET intervention. Educational/informational treatments also show physical and psychological

relief for women with breast cancer, but to a lesser degree than the Supportive-Expressive Therapy tactics. Peer discussion groups, on the other hand, have been found to be ineffective, if not harmful, to breast cancer patients, especially if patients report a solid support system before treatment begins. These findings not only suggest the usefulness of support groups as treatment options for breast cancer patients, but they also establish the most beneficial treatment protocols.

Social Support Group Duration

The actual length of the support group intervention can also alter the reported helpfulness of symptom alleviation in breast cancer patients. A survey study analyzing the effects of the length of participation in a breast cancer support group found women with the longest support group membership to have the lowest anxiety, stress, depression, aggression, and nonsupport scores as measured by the 1991 Personality Assessment Inventory (Stevens & Duttlinger, 1997), when compared to new and nonmembers. Another study exhibited incremental benefits in quality of life scores for women who participated for a greater length of time in a breast cancer support group (Ashbury et al., 1998). This study also indicated what effect the amount of time from diagnosis before membership had on patient satisfaction. Women who joined a breast cancer support group shortly after diagnosis reported the most satisfaction with the treatment interventions. Lastly, one study displayed promising outlooks for more brief cancer support groups. Helgeson et al. (2000) discovered breast cancer patients who participated in support group interventions for only eight weeks reported greater feelings of social support, self-esteem, and quality of life measurements than initially stated before the intervention. Again, these improvements were noted by women with the lowest negatively associated baseline scores, indicating that women with initially adequate social support from family and friends may not receive much help from support group participation.

There are many different styles of implemented breast cancer social support groups, although not all have an equivalent ability to constructively transform the psychological and physical impairments faced by women who are diagnosed with the disease. Statistically, the most effective styles of breast cancer social support groups are led by professionals or volunteers, utilize Supportive-Expressive Therapy, and continue for a duration of one year or longer. Positively associated outcomes have also been noted for breast cancer support groups conducted over the internet, as well as information-based interventions and support groups that meet for less than one year. These support group findings indicate a comprehensive, noninvasive treatment option for women experiencing emotional or physical difficulties related to breast cancer.

Social Support Group Effects on Diverse Attributes of Breast Cancer Patients

The diagnosis of breast cancer affects extremely diverse groups of women. Women of different ages, ethnicities, socioeconomic statuses, educational and religious backgrounds, and psychological predispositions have all acquired the disease. To date, research comparing the therapeutic effects among groups of women of different ages, racial backgrounds, incomes, religious beliefs, and psychological problems is not available. Therefore, comparisons between breast cancer patients at opposite ends of these spectrums are extremely difficult to summarize. Some research studies, however, have focused on more homogeneous breast cancer populations, so tentative results can be assumed through contrasts between studies containing heterogeneous mixtures of women. Two particular categories of this nature involve breast cancer patients' ethnicity and psychological predisposition.

A majority of the breast cancer studies conducted in America involve the participation of Caucasian women. In fact, no breast cancer studies in which white women were not ethnically

favored could be located. Three studies, however, provide insight into the effects of breast cancer social support groups on women of different nationalities. The first, which examined the personal reports of 56 Iranian women who were members in a year-long support group, found participant scores of anxiety and depression dramatically decreased after the intervention (Montazeri et al., 2001). Similarly, an extensive study of support group treatment effects on 449 Chinese women found participants to gain confidence, hopefulness, emotional control, and more positive outlooks on life, as compared to breast cancer patients in China who were not support group members (Mok, 2001).

Another social support study examining low-income Hispanic women in Florida found participants to be less likely to be distressed after their mastectomies if they reported adequate pre-surgery social support from family and friends (Alferi, Carver, Antoni, Weiss, & Duran, 2001). Although this study does not incorporate the actual effects of a support group, the importance of patient perception of social support, along with its subsequently correlated consequences, can be observed.

Overall, the advantageous effects of support group involvement on the alleviation of adversely related side effects associated with having breast cancer is generalized across many studies. In conjunction with ethnically-mixed American studies, studies solely comprised of Iranian, Chinese, and Hispanic women demonstrate that perceptions of social support can greatly affect the health of the cancer patient. These results will now be compared to another diverse attribute among women: Psychological characteristics.

Reactions and difficulties resulting from the diagnosis of breast cancer depend not only on the severity of the disease, but also the individual attributes of the women, especially their psychological predispositions. Women who report particularly low survey scores on mental

stability and fitness at the onset of social support group participation are the members who are most likely to benefit (Goodwin et al., 2001; Helgeson et al., 2000). Although a distinct group of women comprised of the more psychologically distressed participants was not made, the individual survey scores of the women in these studies were traced and analyzed for the duration of the group meetings. Therefore, the ongoing improvements made by these women can be considered evidentially significant in the comparison of diverse breast cancer patients.

In general, women, despite their ethnic background, display trends of psychological improvement when perception of social support is high. The source of this support has been linked to spouses, friends, professionals, and other support group members. Additionally, women who experience the most distress and psychological impairment from the diagnosis of cancer are also the most likely to benefit from participation in breast cancer social support groups.

There are some limitations to the results of these studies. First and foremost, the participants could not be completely randomized. Researchers were only allowed to select women who already had breast cancer and most of the women chosen were homogenous in terms of race and socioeconomic status. Therefore, the results of these studies are partially called into question. These women may have possessed characteristics or genetic predispositions which rendered them more likely to have psychological or physical problems, confounding the findings. Breast cancer participants were also volunteers, implying a greater psychological and/or physical need from an outside source, which again, may hint at confounding variables.

Participants also could have answered questionnaires in socially desirable ways, decreasing the validity of the studies. This point highlights the limitation of reliability involving self-report measures. The only measurement taken in these studies consisted of response scores provided by participants; thus, results could be flawed. Finally, the surveys used in these studies

were not standardized. Therefore, comparisons across different studies and different response measurements are difficult to assess. Also worth noting is the lack of study replication utilizing the same participants and measurements, but at different time periods (Edelman, Craig, & Kidman, 2000). Given the nature of the disease, this limitation may be quite difficult to overcome.

Conclusions

The utilization of support groups for breast cancer patients is positively correlated with psychological and physical symptom improvement in participants. More specifically, breast cancer support groups with professionals or trained peers as group leaders, implementing Supportive-Expressive Therapy, and holding group meetings for one or more years, are the styles of groups most directly associated with the greatest mental and physical advancements. Other support group methods, including internet-centered and information-based meetings, along with groups regularly meeting for less than one year, are also found to be positively connected with reducing impairment experienced by women with breast cancer. Peer discussion support group interventions, however, can cause harm, especially to patients reporting perceptions of sufficient support before joining support groups. In agreement with this finding, women who experience the most distressing and psychologically harmful symptoms are also the most likely to gain mental and physical restoration through support group participation. These findings are replicated among breast cancer patients with diversified ethnic backgrounds.

The results of these studies have many implications for our society. Most importantly, breast cancer social support groups provide an inexpensive, noninvasive, and successful treatment option for women that combats the detrimental effects associated with having breast cancer. This finding is extremely important when considering the side effects of such alternative

treatments as chemotherapy and radiation. Evidence suggesting support groups should replace all other forms of cancer resistance treatment is not being implied. However, there are abundant data suggesting its possible utilization in the alleviation of more invasive treatment side effects such as avoidance, intrusion, and depression.

Furthermore, these studies offer friends and family members of breast cancer patients an idea of how important their social support is to women fighting this disease. Additionally, the role of the physician is highlighted not only through involvement in support group operations, but also as an advocate for the treatment. Results indicate that the more rapidly a woman diagnosed with breast cancer can participate in a support group, the more satisfied and assisted she will likely be.

Moreover, the number of breast cancer support groups available to sick women needs to increase so everyone with the disease can have the opportunity to feel the positive impacts they can have on psychological and physical functioning. All professionals should accordingly promote the usage of this treatment option, especially considering its relative inexpensiveness, its safety, and its beneficially extensive health effects. This treatment technique should be exploited because the potential benefits it provides far outweigh the unlikely negative correlates.

To improve upon present potential study uncertainties, future research needs to examine the varied demographic and clinical attributes of women with this disease (Montazeri et al., 2001), for too many of the studies conducted to date examine educated, middle-class white women. Women of assorted ages, cultural backgrounds, socioeconomic status, and spiritual beliefs need to be evaluated. In addition, the effects of support group participation on men with cancer should also be examined, for men can also suffer from emotional deficits (Helgeson et al., 2000).

Other prospective studies should look to utilize supplementary measurements of support group efficiency, instead of solely relying on the reliability of self-reports. Heart rate, blood pressure, oxygen concentration, and blood analyses could be incrementally studied throughout the duration of the treatment to provide a more in-depth depiction of the physical progressions of the women, if indeed support groups can have such a physical impact. Studies performed in the future also need to define standardized protocols, especially in terms of which surveys to use, so comparisons across studies can be more assuredly made.

Current research data suggest that the utilization of social support groups for the treatment of breast cancer patients is not only favorably correlated with the alleviation of detrimental psychological and physical symptoms, but its potentially hazardous health implications are unlikely. Therefore, breast cancer patients experiencing mental or physical problems from their diagnosis should be encouraged and recommended to join a social support group.

University of Northern Iowa Athlete/Athletic Trainer Study

In accordance with the preceding research findings, I decided to assess an isolated provider-patient relationship for congruence of opinions concerning factors creating and perpetuating health-related problems. Comparisons between health care providers and consumers regarding their beliefs about potential physical, psychological, and social sources of health problems are an important factor to consider when evaluating the effectiveness of a health care system. If patients and health care providers greatly differ in their opinions about the potential factors leading to and maintaining health issues, then solutions designed to alleviate those concerns will not be as efficient or successful as they prospectively could be. Both physicians

and patients need to have a common understanding about the specific health issue, in addition to comprehending every possible cause for its emergence and continuance.

Due to both time and budget constraints, I decided to examine the provider-patient relationship that exists between the athletic trainers and athletes at the University of Northern Iowa. Being a student-athlete myself, I know the athletic trainers are the main source of medical advice and counseling offered to student athletes when they are injured or have other sources of health problems. Although doctors and other experts are called upon to treat more serious health problems, the overall relationship shared between the athletic trainers and the student-athletes at the University of Northern Iowa is not only well established and developed, but also fairly isolated. Specific athletic trainers are assigned to certain sports, so the interactions that occur between the trainers and athletes are limited in scope. However, this arrangement allows the athletic trainers and athletes to develop closer personal relationships. For this reason, I chose to survey both parties regarding their opinions about why injuries occur and perpetuate.

Participants

Meetings with participants were arranged via email, either through a graduate assistant athletic trainer or a head athletic coach. After appointments were scheduled, I attended various classes and practices to administer my survey. During these prearranged meetings, potential participants were asked to complete a survey assessing their opinions about the causes of injuries and why they sometimes perpetuate. To protect the confidentiality of all participants, only their age, gender, and year in school was asked of them. No written consent was requested because this procedure would have jeopardized the confidentiality of the participant's responses more than the actual survey itself. Research involvement was not required of anyone who was approached; only those who chose to participate did. Participants were notified that there was

minimal risk involved in completing the survey and also an insignificant amount of direct benefit as well. Both parties were also informed that their status as an athletic trainer or athlete would in no way be affected by their decision to participate. The only criterion that was required for all potential participants was they be at least 18 years of age.

Method

During each meeting with potential participants, surveys were distributed to every individual after the oral consent form was read. Participation was completely voluntary; those who wished to complete the survey did and those who did not left the survey blank. Participation status among the individuals could not be assessed, for all candidates were instructed to return their surveys upside-down. Participants were also instructed about whom to contact if they had any further questions or concerns about the project.

The completion of the survey required answering a total of six different opinion statements concerning injuries and factors responsible for their perpetuation. Six potential factors were identified on each survey, three concerning physical aspects of the injury and three concerning psychological/social aspects. Participants were asked to rank the statements in order from most directly to least directly responsible for lengthening the time they or their athletes spent injured. A ranking of a 1 meant the statement concerning the potential factor was most likely to perpetuate an injury. A ranking of a 6 meant the statement was least likely of all the provided factors to increase the amount of time spent injured by the athlete. Only one number was assigned to each statement; therefore, each number was used only once during the ranking. The three physical components that were listed as potential factors in lengthening injuries were: Lack of rest/quality sleep, physical stresses and demands (practice), and poor diet/hydration. The three psychological/social components that were listed as potential factors were: Pressure from

coaches to succeed and/or improve, relationship problems (family or significant other), and stress caused by school and/or homework demands.

It was hypothesized that the athletic trainers would rank the physical factors as the most likely to perpetuate injuries. Because most athletes consult with athletic trainers concerning only physical issues, it was hypothesized that athletic trainers would therefore mainly consider physical factors as potential reasons for lengthening injuries. Athletes were predicted to rank the psychological/social factors higher than the athletic trainers because although these types of problems are not typically discussed with the athletic training staff, they do still exist, and their presence can cause injury-related troubles. Thus, the student-athletes were predicted to be more aware of any psychological or social component related to injuries and their perpetuation, as compared to the athletic trainers.

Results

A total of 38 athletic trainers and 113 student-athletes from the University of Northern Iowa completed surveys assessing their attitudes about injuries. The sample of athletic trainers consisted of 8 male and 30 female participants. Correspondingly, the sample of student-athletes consisted of 66 male and 47 female participants. Participating athletes were members of various different teams. Males were members of the following men's teams: Baseball, basketball, cross country, football, track and field, and wrestling. Females were members of the following women's teams: Basketball, cross country, soccer, swimming, track and field, and volleyball.

The results of the study will be presented in a general trend format. This is due in part to the small sampling of athletic trainers available for the study, in addition to the fact that the survey required a ranking response. A forced-choice survey was administered, instead of a

Chart 4: Female Athletic Trainers' Reported Ratings

Ratings (By percent of total, n = 30 (Actual # of individuals))

Factors	#1	#2	#3	#4	#5	#6
Sleep	6.67% (2)	30.00% (9)	13.33% (4)	16.67% (5)	20.00% (6)	13.33% (4)
Practice	46.67% (14)	26.67% (8)	0.00% (0)	6.67% (2)	6.67% (2)	13.33% (4)
Coaches	10.00% (3)	16.67% (5)	16.67% (5)	16.67% (5)	30.00% (9)	10.00% (3)
Diet	23.33% (7)	13.33% (4)	16.67% (5)	20.00% (6)	13.33% (4)	13.33% (4)
Relationships	13.33% (4)	3.33% (1)	13.33% (4)	10.00% (3)	16.67% (5)	43.33% (13)
Homework	0.00% (0)	10.00% (3)	40.00% (12)	30.00% (9)	13.33% (4)	6.67% (2)
TOTAL	100%	100%	100%	100%	100%	100%

Chart 5: Overall Athlete Rankings

Overall Rank	Factor
1	Practice
2	Sleep
3	Diet
4	Homework
5	Relationships
6	Coaches

Chart 6: Overall Athletic Trainer Rankings

Overall Rank	Factor
1	Practice
2	Sleep
3	Homework
4	Diet
5	Coaches
6	Relationships

As a group, the athletic trainers ranked the leading factor in perpetuating an injury to be physical demands experienced from practices (see corresponding charts). This response accounted for 50.00% of all the number 1 rankings reported by the athletic trainers surveyed. The second through sixth leading causes, and their associated rank percentages, in order, were as

follows: Lack of rest/quality sleep (31.58%), stress related to school (31.58%), poor diet/hydration (21.05%), pressure from coaches (26.32%), and relationship problems (42.11%).

The response trends among the female athletic trainers were exactly the same as the athletic trainers' replies as an entire group. The male athletic trainers' responses were somewhat different, though. Both physical demands from practice and lack of sleep received similar ratings of most and second most likely to perpetuate an injury. However, diet ranked third, homework stresses ranked fourth, relationship problems ranked fifth, and pressure from coaches ranked sixth most likely to increase the amount of time an athlete spends injured.

Additionally, trends across each category were also different between the genders of athletic trainers. For example, both diet and relationship problems received first ranking votes from the female trainers, representing 23.33% and 13.33% of the total number of first ranking responses, respectively. In contrast, no male athletic trainers ranked these two potential factors as deserving of a number 1 ranking. Furthermore, male athletic trainers reported that pressure from coaches was a more important potential factor in perpetuating an injury, as compared to female athletic trainers, who generally ranked this variable as less important. This finding may be due in part to the male athletic trainers' perception of coaches being male and stereotypically more aggressive and demanding than female coaches, whom are more likely to be considered by the female athletic trainers.

As a group, the student-athletes ranked the leading factor in perpetuating an injury to be the same as the athletic trainers: Stresses and demands encountered from practices and other workouts (see corresponding charts). This category accounted for 55.75% of all the number 1 rankings reported by the athletes surveyed. The second through sixth leading causes and their associated rank percentages, in order, were as follows: Lack of quality sleep (31.86%), poor

diet/hydration (24.78%), stress caused by school and/or homework demands (30.97%), relationship problems (26.55%), and pressure from coaches (11.50%).

The trends among the female athletes' responses were exactly the same as for the group as a whole, except that the women ranked pressure from coaches fifth and relationship problems sixth most likely to increase the amount of time they spent injured. The trends among the male athletes were fairly dissimilar compared to the generalized group responses from all the athletes surveyed. The men surveyed reported the same first three factors as most likely to perpetuate an injury, but ranked pressure from coaches fourth, relationship problems fifth, and homework problems sixth most likely to serve as factors increasing their injury time.

Additionally, trends across each category were also different between the genders of athletes surveyed, although they were less noteworthy than the differences observed between the different genders of athletic trainers. Specifically, the male athletes were more likely to rank diet problems and coaching pressures as more likely to lead to prolonging an injury as compared to the female athletes. A total of 9 males ranked diet as the most likely factor to perpetuate injuries, whereas only 3 females concurred with this view. Similarly, 71.21% of males ranked pressure from coaches a top-4 ranking, whereas only 61.70% of the female athletes surveyed did. Most gender trends between the athletes may not be statistically significant if the number of athletes surveyed is taken into account. The statistical significance was not tested, however.

Discussion

The results of this study report trends in attitudes held by both athletic trainers and athletes concerning injuries and the factors that lead to their perpetuation. In general, the hypothesis that athletic trainers would select physical factors as more likely to perpetuate injuries, as compared to student-athlete attitudes, was not found. Instead, it was the athletes who reported

that all three physical factors were most likely to lengthen injuries, as compared to the three psychological/social factors. Both groups surveyed reported that the most likely factor in perpetuating an injury consists of stresses and demands experienced from practice and other team workouts. Both athletic trainers and athletes agreed that the second most likely factor was sleep deprivation. All athletes and the male athletic trainers reported the third most likely factor in lengthening injuries to be poor diet and lack of sufficient hydration, whereas the female athletic trainers ranked homework problems as more probable to lead to increased duration of injuries. No group had similar fourth through sixth rankings. The male athletic trainers ranked homework problems fourth, relationship problems fifth, and pressure from coaches sixth most likely to cause an injury to perpetuate. Female athletic trainers ranked poor diet fourth, pressure from coaches fifth, and relationship problems sixth most likely to worsen injuries. Dissimilar trends were also noted for the athletes. Of the male athletes surveyed, they ranked pressure from coaches fourth, relationship problems fifth, and homework demand sixth most likely to lead to increased duration of time spent injured. The female athletes ranked homework stresses and demands fourth, pressure from coaches fifth, and relationship problems sixth most likely to be a factor for perpetuating injuries. These results indicate that women have higher academic stresses, and potential priorities, than men do, and that men experience greater relationship problems than do women.

It can be observed from the collected data that differences do exist between the athletic trainers' and athletes' attitudes about the factors that lengthen injuries. Specifically, according to the responses of the athletes surveyed, the athletic trainers underestimated the impact diet and relationship problems can have on the health of an athlete. Homework demands and pressure from coaches were correspondingly ranked higher as potential factors for lengthening injuries

than reported by the actual athletes themselves. Statistically, most of these differences are unlikely to be significant if the statistical significance is tested. However, the relative lack of understanding among both athletes and athletic trainers concerning psychological issues as they relate to health can easily be observed. This trend can be noted in the lack of any number 1 rankings ascribed to the psychological/social factors by the male athletic trainers. These findings may be worth investigating further, especially if these male trainers are responsible for the health of athletes who feel psychological and/or social factors are more likely to be associated with their injury duration.

Overall, the trends between athletic trainers and athletes concerning attitudes about the perpetuation of injuries are fairly similar. No major differences were noted between the two groups, although differences in opinion were observed. These findings demonstrate a greater need for understanding between health providers and patients concerning the potential causes of any health problem. Psychological factors should be discussed between the provider and patient in order to obtain a better grasp of the individual attitudes of each party. These findings illustrate the importance of individually assessing patients for their opinions about why they personally believe they are experiencing health problems. Additionally, the importance of effective communication is also highlighted. Providers can not correctly determine the disease pathology of their patients if they do not listen and take into account their individual reports.

The findings of this study may be helpful in assessing a number of provider-patient relationships. To make the study more meaningful, however, different measurements of the dependent variable should be used. One idea would be to use a Likert scale, so that the strength of opinions for each factor could be assessed on a continuum (Elmes, Kantowitz, & Roediger, 2003). Also, larger samples should be generated so results can be more generalized. Lastly,

relationships between providers and patients should be assessed in different medical settings.

There are many degrees of health problems for which patients seek treatments, so more extensive research should be conducted with these populations.

Conclusions

Based on the preceding results of the psychological, social, and provider-patient relationship studies, evidential support for the potential effectiveness of the biopsychosocial model of healthcare proposed by George L. Engel was found. In fact, the majority of the studies conducted in these areas of healthcare show overwhelming verification for the prospective beneficial utilization of this theoretical model of medicine. Specifically, “this new approach to health says loudly and clearly that the causes, development, and outcomes of an illness are determined by the interaction of psychological, social, and cultural factors with biochemistry and physiology. The mind – a manifest functioning of the brain – and the other body systems interact in ways critical for health, illness, and well-being” (Ray, 2004, pg. 29). Additionally, the importance of individual health assessment was also noted throughout many of the preceding studies. As stated by Hippocrates, “It is better to know the patient who has the disease than it is to know the disease which the patient has” (Ray, 2004, pg. 30).

If the biopsychosocial model offers a more accurate depiction of all the components interceding in the authenticity of medicine, then in what specific ways can this theory be applied? First and foremost, this evidential information needs to be publicized, especially to practicing physicians who dictate the practice of medicine. Secondly, medical school philosophies need to incorporate courses that instruct future physicians of the importance of taking into account the social and psychological status of their patients before making diagnoses. Lastly, public health systems should fund preventive measures in the hope that it will consequentially decrease the

number of individuals who acquire illness and disease. These methods could include such procedures as initiating educational programs about stress-reducing strategies, creating social support groups for various health issues, and even requiring all physicians to complete a psychological evaluation on all patients before diagnosis. Regardless of the impending difficulty in changing the classical view of medicine, these results have significant meaning for the future of the American healthcare system. “Mind/body medicine is not something separate or periphery to the main tasks of medical care but should be an integral part of evidence-based, cost-effective, quality health care” (Sobel, 2000, pg. 1705).

References

- Alferi, S. M., Carver, C. S., Antoni, M. H., Weiss, S., & Duran, R. E. (2001). An exploratory study of social support, distress, and life disruption among low-income Hispanic women under treatment for early stage breast cancer. *Health Psychology, 20*, 41-46.
- Alpers, G. W., Winzelberg, A. J., Classen, C., Roberts, H., Dev, P., Koopman, C., et al. (2004). Evaluation of computerized text analysis in an internet breast cancer support group. *Computers in Human Behavior, XXX*, 1-16. Retrieved March 16, 2004 from <http://www.sciencedirect.com>
- Ashbury, F. D., Cameron, C., Mercer, S. L., Fitch, M., & Nielson, E. (1998). One-on-one peer support and quality of life for breast cancer patients. *Patient Education Counseling, 35*, 89-100. Retrieved February 6, 2004, from <http://www.sciencedirect.com>
- Butler, L. D., Koopman, C., Classen, C., & Spiegel, D. (1999). Traumatic stress, life events, and emotional support in women with metastatic breast cancer: Cancer-related traumatic stress symptoms associated with past and current stressors. *Health Psychology, 18*, 555-560.
- Classen, C., Butler, L. D., Koopman, C., Miller, E., DiMiceli, S., Giese-Davis, J., et al. (2001). Supportive-expressive group therapy and distress in patients with metastatic breast cancer. *Archives of General Psychiatry, 58*, 494-501.
- Cohen, S., Doyle, W. J., & Skoner, D. P. (1999). Psychological stress, cytokine production, and severity of upper respiratory illness. *Psychosomatic Medicine, 61*, 175-180.
- Cohen, S., Tyrrell, D. A. J., & Smith, A. P. (1991). Psychological stress and susceptibility to the common cold. *The New England Journal of Medicine, 325*, 606-612.

- Cohen, S., Tyrrell, D. A. J., & Smith, A. P. (1993). Negative life events, perceived stress, negative affect, and susceptibility to the common cold. *Journal of Personality and Social Psychology, 64*, 131-140.
- Edelman, S., Craig, A., & Kidman, A. D. (2000). Can psychotherapy increase the survival time of cancer patients? *Journal of Psychosomatic Research, 49*, 149-156. Retrieved February 6, 2004, from <http://www.sciencedirect.com>
- Elmes, D. G., Kantowitz, B. H., & Roediger III, H. L. (2003). *Research Methods in Psychology* (7th ed.). Australia: Thomson & Wadsworth.
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science, 196*, 129-136.
- Engel, G. L. (1980). The clinical application of the biopsychosocial model. *The American Journal of Psychiatry, 137*, 535-544.
- Evans, S., Ferrando, S. J., Rabkin, J. G., & Fishman, B. (2000). Health locus of control, distress, and utilization of protease inhibitors among HIV-positive men. *Journal of Psychosomatic Research, 49*, 157-162. Retrieved March 16, 2004, from <http://www.sciencedirect.com>
- Eysenck, H. J. (1993). Prediction of cancer and coronary heart disease mortality by means of a personality inventory: Results of a 15-year follow-up study. *Psychological Reports, 72*, 499-516.
- Fanu, J. E. (1999). *The Rise and Fall of Modern Medicine*. New York: Carroll & Graf Publishers, Inc.
- Fogel, J., Albert, S. M., Schnabel, F., Ditkoff, B. A., & Neugut, A. I. (2002). Internet use and social support in women with breast cancer. *Health Psychology, 21*, 398-404.

- Friedman, H. S., & Booth-Kewley, S. (1987). The "disease-prone personality." *American Psychologist*, *42*, 539-555.
- Giese-Davis, J., Koopman, C., Butler, L. D., Classen, C., Cordova, M., Fobair, P., et al. (2002). Change in emotion-regulation strategy for women with metastatic breast cancer following supportive-expressive group therapy. *Journal of Consulting and Clinical Psychology*, *70*, 916-925.
- Goodwin, P. J., Leszcz, M., Ennis, M., Koopmans, J., Vincent, L., Guthrie, H., et al. (2001). The effect of group psychosocial support on survival in metastatic breast cancer. *The New England Journal of Medicine*, *345*, 1719-1726.
- Gore-Felton, C., & Spiegel, D. (1999). Enhancing women's lives: The role of support groups among breast cancer patients. *Journal for Specialists in Group Work*, *24*, 274-287.
- Grossarth-Maticek, R., & Eysenck, H. J. (1991). Personality, stress, and motivational factors in drinking as determinants of risk for cancer and coronary heart disease. *Psychological Reports*, *69*, 1027-1043.
- Hamrick, N., Cohen, S., & Rodriguez, M. S. (2002). Being popular can be healthy or unhealthy: Stress, social network diversity, and incidence of upper respiratory infection. *Health Psychology*, *21*, 294-298.
- Helgeson, V. S., Cohen, S., Schulz, R., & Yasko, J. (2000). Group support interventions for women with breast cancer: Who benefits from what? *Health Psychology*, *19*, 107-114.
- Helgeson, V. S., Cohen, S., Schulz, R., & Yasko, J. (2001). Long-term effects on educational and peer discussion group interventions on adjustment to breast cancer. *Health Psychology*, *20*, 387-392.

- Magen, R. H., & Glajchen, M. (1999). Cancer support groups: Client outcome and the context of group process. *Research on Social Work Practice, 9*, 541-554. Retrieved February 6, 2004, from <http://www.titania.ingentaselect.com>
- Maier, S. F., Watkins, L. R., & Fleshner, M. (1994). Psychoneuroimmunology: The interface between behavior, brain, and immunity. *American Psychologist, 49*, 1004-1017.
- Marsland, A. L., Bachen, E. A., Cohen, S., Rabin, B., & Manuck, S. B. (2002). Stress, immune reactivity and susceptibility to infectious disease. *Physiology & Behavior, 77*, 711-716. Retrieved March 16, 2004, from <http://www.sciencedirect.com>
- Marucha, P. T., Kiecolt-Glaser, J. K., & Favagehi, M. (1998). Mucosal wound healing is impaired by examination stress. *Psychosomatic Medicine, 60*, 362-365.
- Mok, B. (2001). Cancer self-help groups in China: A study of individual change, perceived benefit, and community impact. *Small Group Research, 32*, 115-132. Retrieved February 4, 2004, from <http://taddeo.ingentaselect.com>
- Montazeri, A., Jarvandi, S., Haghghat, S., Vahdani, M., Sajadian, A., Ebrahimi, M., et al. (2001). Anxiety and depression in breast cancer patients before and after participation in a cancer support group. *Patient Education and Counseling, 45*, 195-198. Retrieved February 4, 2004, from <http://www.sciencedirect.com>
- Raven, P. H., & Johnson, G. B. (1999). *Biology* (5th ed.). Boston, MA: McGraw-Hill.
- Ray, O. (2004). How the mind hurts and heals the body. *American Psychologist, 59*, 29-40.
- Rojas, I., Padgett, D. A., Sheridan, J. F., & Marucha, P. T. (2002). Stress-induced susceptibility to bacterial infection during cutaneous wound healing. *Brain, Behavior, and Immunity, 16*, 74-84. Retrieved March 16, 2004, from <http://www.sciencedirect.com>

- Sarafino, E. P. (1990). *Health Psychology: Biopsychosocial Interactions*. New York: John Wiley & Sons.
- Serlin, I. A., Classen, C., Frances, B., & Angell, K. (2000). Symposium: Support groups for women with breast cancer: Traditional and alternative expressive approaches. *The Arts in Psychotherapy, 27*, 123-138. Retrieved February 6, 2004, from <http://www.sciencedirect.com>
- Snyder, J. J. (1989). *Health Psychology and Behavioral Medicine*. Englewood Cliffs, NJ: Prentice Hall.
- Sobel, D. S. (2000). Mind matters, money matters: The cost-effectiveness of mind/body medicine. *JAMA, 284*, 1705.
- Stevens, M. J., & Duttlinger, J. E. (1998). Correlates of participation in a breast cancer support group. *Journal of Psychosomatic Research, 45*, 263-275. Retrieved February 6, 2004, from <http://www.sciencedirect.com>
- Targ, E. F., & Levine, E. G. (2002). The efficacy of a mind-body-spirit group for women with breast cancer: A randomized controlled trial. *General Hospital Psychiatry, 24*, 238-248. Retrieved February 8, 2004, from <http://www.sciencedirect.com>
- Taylor, S. E. (2003). *Health Psychology* (5th ed.). Boston, MA: McGraw-Hill.
- Taylor, S. E., Falke, R. L., Shoptaw, S. J., & Lichtman, R. R. (1986). Social support, support groups, and the cancer patient. *Journal of Consulting and Clinical Psychology, 54*, 608-615.