

**A COMPARATIVE STUDY OF THE EFFECTS OF
PHOTOSTIMULATION AND AUTOGENIC TRAINING IN
REDUCING STRESS, ANXIETY, AND DEPRESSION**

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The work reported in this dissertation is original and carried out by me solely, except for the acknowledged direction and assistance gratefully received from colleagues and mentors.

Nancy Jane Calloway

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*An invisible and subtle essence is the spirit of the whole universe.
That is Reality. That is Truth. Thou are That.*

The Upanishads

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ABSTRACT

The purpose of the experimental study was to compare the effects of two treatments: photostimulation (using the Shealy RelaxMate™) and autogenic training (using Basic Shultz audiotape), evaluating their effectiveness in lowering levels of anxiety and depression in self-claimed stressed out people. Seventy self-claimed very stressed out adults volunteered as subjects for the study. The subjects attended an initial meeting where they were pre-tested, using the State Trait Anxiety Inventory (STAI) and the Zung Self- Rating Depression Scale (Zung) to measure initial anxiety and depression levels. They were given the Spiritual Well-Being Scale (SWBS) to measure initial spiritual well-being. They were given information regarding relaxation and its effectiveness in reducing stress, anxiety, and depression. Subjects were randomly assigned to one of two groups of 35 and were given instructions regarding how to use the instrument randomly assigned to them. One group used the Basic Shultz tape intervention twice daily at home for twenty minutes. The other group used the RelaxMate™ intervention at least once daily for an hour when falling asleep at night. After four weeks the subjects were post-tested using STAI, Zung, and SWBS in order to obtain comparative scores. The null hypothesis was supported. There was no difference in the effects of RM and AT. Both the RM and AT showed statistically significant efficacy ($p < .001$) in lowering levels of anxiety and depression and in enhancing spiritual well-being.

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CHAPTER 1:

REVIEW OF LITERATURE AND PROBLEM OVERVIEW

Introduction and Statement of the Problem

We do not have to visit a madhouse to find disordered minds; our planet is the mental institution of the universe.

Goethe

Type the letters S-T-R-E-S-S at Google and 282 million results are offered on the World Wide Web. Enter anxiety and depression and another 212 million results are at your fingertips. This focus on stress, anxiety, and depression is big business for not only those trained to treat stress related diseases, but also for pharmaceutical companies, publishing houses, and the media. Market data estimates that 10 million Americans see a psychiatrist annually for stress related issues at a cost of \$6.6 billion. Estimates from the Centers for Disease Control in Atlanta suggest that 80% of health care today is spent on stress related disorders (Gopal & Durat, 1998). It is generally accepted that 60% to 90% of symptoms are psychosomatic and are actually a consequence of unbalanced reaction to stress (Shealy, 1986, p.9).

Although a recent National Vital Statistics Report which listed the 10 leading causes of death in the United States did not include the word “stress” at all, many respected studies link two of the top ten killers -- stroke and heart disease -- to stress. In 1999 heart disease was responsible for one third of deaths. It is believed by some that stress may also be linked to cancer and to lower respiratory diseases, which rank as two and four in the top 10. Stress is

implicated in anxiety and depression and it triggers flare-ups of asthma, gastrointestinal problems, and rheumatoid arthritis (Dadoly, Coltrera & Allison, 2002).

Linguistically, the word “stress” has taken on a contemporary connotation commensurate with our society’s psychosocial evolution. Only fifty years ago, for example, “bridges were stressed. Humans were worried or fearful. Since the 1950’s, ‘stress’ has evolved from an engineering term to a cultural construct” (Gopal& Durat, 1998). As recently as twenty four years ago, in 1983, the June 6th cover story of TIME magazine referred to stress as “The Epidemic of the Eighties,” claiming that it was then our leading health problem. Today, as the Google results show, our culture’s concern with stress so dominates the American psyche that we can only look back on those stressed bridges with a yearning for a time when bridges, not people, were stressed.

Stress, Anxiety, and Depression—The Link

Current literature leaves little doubt that stress, anxiety, and depression are interrelated. As psychological reactions to stress, anxiety, and depression frequently go hand in hand and therefore are sometimes referred to as “the fraternal twins of mood disorders” (Retrieved December 14, 2006 from

http://www.healthyplace.com/communities/depression/related/depression _anxiety. asp).

Dolnak presents the argument that between one third and two thirds of individuals in America have significant depression as well as several comorbid anxiety disorders. These include generalized anxiety disorder (GAD, 62%); obsessive compulsive disorder (OCD, 27%); posttraumatic stress disorder (PTSD, 48%); social anxiety disorder (SAD, 37%); panic disorder and specific phobias (48%); and panic disorder (56%) (Wittchen et al., 1994; Magee

et al., 1996; Roy-Byrne, 2000; Kessler, 1995; Weissman, 1994; Jeon et al., 2006). Due to these overlapping symptoms, proper diagnosis by a medical professional is important and difficult (Dolnak, 2006, p. 2).

According to Fawcett and Kravitz anxiety appears to be very common among depressive disorders. In fact, they maintain that the presence and severity of anxiety's symptoms seem to be a significant factor in the clinical management of major depression (1983, p.8). Findings at the University of Pittsburg School of Medicine, in a study on the phenomenology and severity of major depression and comorbid lifetime anxiety disorders, report that distinctive patterns of depressive symptoms and severity are related to lifetime histories of panic and generalized anxiety disorder (GAD) (Brown et al., 1996, p. 210).

Stress and depression are also linked. It appears that under the right conditions enough stress can invoke a depressive disorder in an individual. One study reported in The American Journal of Hypertension demonstrates that by relieving stress on African American women the impact of their depression on diastolic blood pressure was attenuated (Artinian et al., 2004, p.160A). In another study researchers found that depressed people have a persistently elevated blood cortisol level. Cortisol is the primary circulating steroid hormone associated with the stress response, indicating that stress or the stress response and depression are linked (Retrieved on December 12, 2006 from http://www.medscape.com/viewarticle/408416_4). Medically, elevated cortisol is a consistent reaction to stress (N. Shealy, personal communication, December 2006).

Oloff found that although some individuals seem to have better coping skills for stress than do others, prolonged *exposure to stressors* or *to extreme life stresses* may outweigh any individual's coping resources, therefore leading to depression. She summarizes, "Stressful

life experiences play an important role in the etiology of depressive complaints. Depression may be conceived as a component of chronic stress” (Olf, 1999, p. 7).

It is not uncommon for people to develop depression following a stressful event such as a death of an important person, a serious illness or the loss of a job. Negative or traumatic experiences in life cause many people great stress as well, but so can positive events such as getting married, having babies, or moving to another town as the result of a big job promotion. Both negative and positive experiences can cause enough change in life patterns, leading to crisis which precedes the development of depression (Retrieved on December 14, 2006 from http://www.allaboutdepression.com/gen_05.html).

The necessity to struggle with chronic stress, for example, juggling multiple roles at work and at home, living under the hand of abuse, or holding a job while combating a chronic illness can also lead to depressive disorders. One who is under continuous stress is often vulnerable to depression which could be induced by one additional specific traumatic or negative event (Ibid.).

Equally strong is the connection between stress and anxiety. Shealy states that anxiety is an inevitable part of the reaction to stress (N. Shealy, personal communication, December 17, 2006). In a 25 year longitudinal study of over 1000 participants Boden et al. found that measures of anxiety were associated to stressful life events (2006). Pfeffer et al. demonstrated in a longitudinal study that stressful events increase risk for childhood anxiety and depression and hypothalamic-pituitary-adrenal (HPA) axis dysregulation. Bereaved children showed significantly increased rates of psychiatric disturbance including anxiety disorders, especially posttraumatic stress disorder (PTSD), after September 11, 2001, whereas the non-bereaved children showed none of these signs. Cortisol levels of the

bereaved children were significantly and persistently higher than cortisol levels of the non-bereaved children (Pfeffer, 2006). Research shows that in response to physical danger or psychological stress scores on the S-Anxiety scale (STAI) increase, whereas they decrease as a result of relaxation (Spielberger, 1983, p. 6).

According to Shealy, 40% of Americans are clinically depressed at any specific given time, and in the period of one year at least 20% of adult Americans are prescribed antidepressant medications (Shealy, C.N. (2005). *I Have a CAM Vision*. Lecture given in Winston Salem, N.C.). After over twenty years of working with people who suffer with pain, Shealy says he realized that what he was really dealing with was *chronic stress*. This led him to conclude, “There’s only one major illness, and it’s called depression” (Hartley, ArgIsle & Breiling, 1996, p.166). “Depression is the most common problem affecting humanity. In essence, it is the ultimate emotional stress” (Shealy, 2003).

Anxiety and depression are discussed in more detail later in this literature review. In summary, research supports the fact that stress leads to anxiety and continuous /unresolved anxiety leads to depression. These three are linked in such a way that together they function as a continuum, diminishing quality of life, threatening health, and impeding the sense of well-being (N. Shealy, personal communication, December 17, 2006). Fortunately there are safe and healthy ways, holistic in approach, that work with these three ‘culprits’ in order to maintain good health and a strong sense of well-being. These methods are presented in this literature review.

Purpose of the Study

This study was conducted in order to *compare* the effects of photostimulation and autogenic training in their efficacy in lowering levels of stress, anxiety, and depression. The participant population consisted of self appointed extremely stressed out individuals who wanted to reduce their stress levels for various reasons. Many were caregivers of elderly and dependent family members, but most of the participants were ‘regular’ everyday people who were simply trying to make their lives better despite the constant pounding of day-to-day stress. They listed their jobs, families, divorces, marriages, relationships, teenagers, crises, and other “demands of life” as their stressors. Some were on antidepressant medications. Others were already dealing with a stress related disease and were on specific medications.

It is this researcher’s opinion that because autogenic training and photostimulation are already known to reduce stress, it is beneficial to determine if one approach works better than the other. If research demonstrates preferable results, then this is valuable information to have as progress is made in the field of health and well-being, holistic medicine, and spiritual healing. Assuming that our fast paced society is not going to de-stress automatically, identifying relatively easy to use and affordable methods which help people achieve deep relaxation is essential for health maintenance and ultimately for the care of the people in our society. This research effort is a step toward that endeavor.

Stress – Its Impact and Our Response

Stress is nothing more than a socially acceptable form of mental illness.

Richard Carlson

Reaching back in history, 2400 years ago, Hippocrates diagnosed that all human illness was the result of change. The father of Western medicine suggested, “It is changes that are chiefly responsible for diseases, especially the greatest changes, the violent alterations both in the seasons and in other things” (Justice, 1987, p.45). In *Ethology and Stress Diseases*, Nikolaas Tinbergen, 1973 winner of the Nobel Prize in Medicine, examines this societal phenomenon of stress and predicts, “stress in the widest sense, the inadequacy of our adjustability, will become perhaps the most important disruptive influence in our society” (Tinbergen, 1974, p.26). In his book, *Sacred Healing*, C. Norman Shealy observes, “stress is the common denominator in all dis-ease as well as in serious illnesses” (Shealy, 1999, p.103).

Even though the numbers of treatments for stress continue to rise, *successful treatments* for stress related diseases have not increased at a commensurate rate. What is seen is an increase in dis-ease rather than an increase in mental health. These rising numbers in dis-ease point to a flaw in our present treatment and management of stress-related illnesses; it is this particular flaw, or weakness, that must be recognized, understood, and addressed if we are ever to reverse the trend in rising cases of stress related diseases.

Reasons to Use An Holistic Approach for Reducing Stress

The competent physician, before he attempts to give medicine to the patient, makes himself acquainted not only with the disease, but also with the habits and constitution of the sick man.

Cicero

During the last two decades our culture has depended primarily on the biomedical model as its guideline for treating anxiety and depression. This model misconstrues anxiety and depression as conditions treatable by pharmaceutical medication, but this approach is presently under scrutiny partially because its success rate is questionable. This concept is discussed in more detail at the end of the literature review.

Not only have psychological medications fallen under suspect, but so has what we think of as 'health care' in the United States. An article in the Journal of the American Medical Association reports that the health care system in the United States is tolerated due to the (erroneous) assumption that spending more dollars results in better health; however, results from several studies indicate that 20% to 30% of patients in the United States receive contraindicated care (Starfield's study (as cited in Schuster et al., 1998)). Concurrently the Institute of Medicine (IOM) also issued a report entitled "To Err Is Human" which states that each year there are 44,000 to 98,000 deaths in the United States caused by medical mistakes. Iatrogenic causes of death total 225,000 according to Starfield's report, and she says these numbers are on the *lower* side of the spectrum. Higher estimates range from 230,000 to 284,000 deaths annually due to iatrogenic causes. Whatever the case, 225,000 deaths annually constitute the *third leading cause of death* in the United States (Ibid., p. 484).

Starfield reports that in comparison to 13 nations the United States ranks on average 12th - which is second from the bottom - for 16 available health indicators (Ibid., p.483). The World Health Organization recently confirmed the United States' poor performance, using a different set of measures which ranked the United States as 15th among 25 in the industrialized countries (Starfield's study (as cited in World Health Report, 2000)). The

numbers regarding the United States' unfortunate position in health care worldwide are not dependent on the particular measures used (Ibid.).

There is a plethora of information regarding the state of affairs of current medical care in the United States. Even Tommy Thompson, Secretary of Health and Human Services, in 2002 is recorded as saying, "The American medical system is on the verge of collapse" (Shealy, 2005 (as cited: Tommy Thompson, speech delivered to the American Medical Association, July 18, 2002, Chicago)). While it is depressing to imagine that such appalling figures describe medical reality in the United States of America, it is important to recognize them as excellent reasons for Americans to consider alternative, holistic ways of maintaining health. The holistic model promotes the total well-being and optimal functioning of the *whole* individual; it recognizes the *whole* person – body, mind, spirit, emotions, and relationships - and holistic treatments reflect this vision (Kemper, 2002, xvi). In addition, holistic treatments are comparatively safe, which today is an important requirement for any kind of health treatment.

Shealy believes that "those physicians who have emphasized holistic and alternative approaches [are the ones who] understand the stress reaction well" (1999, p.103). Tinbergen agrees and suggests, "More attention to the body as a whole and to the unity of body and mind could substantially enrich the field of medical research...and ultimately help us understand what psychosocial stress is doing to us" (1974, p.184). The related research study focuses on two relaxation methods, photostimulation and autogenic training, which are congruent with the holistic perspective for healing; both methods address the whole person in order to achieve a reduction in stress levels for those who use them with diligence.

A broad overview of stress as a psychosocial concept and of anxiety and depression as psychological responses to stress is presented in the literature review. While western medicine has come to rely on pharmaceutical interventions as its primary treatment for stress and its related conditions, many Americans have started questioning this approach, even doubting the ‘ethics’ of what is now known as “Big Pharma.” The abuse and misuse of pharmaceuticals is a dangerous, even frightening trend in America, and now that medical/pharmaceutical mistakes are the third cause of death in the United States we cannot dismiss the issue. On the positive side this trend is creating an opening for holistic medicine and alternative approaches to demonstrate their effectiveness in safely creating and maintaining health and well-being.

Relaxation: The Holistic Response to Stress

Man is ill because he is never still.

Paracelsus

With the growing popularity of holistic medicine, new and different (non-conventional) methods of reducing stress, anxiety, and depression are available, easily accessible, and affordable. One non-conventional approach, relaxation, has distinguished itself during the past eighty years among holistic practitioners in particular as *the* absolute best antidote for stress. Scientific research supports relaxation as a healthy and safe approach for relieving stress, the formidable threat to our health and well-being. Photostimulation and autogenic training, two approaches which help people reach a state of deep relaxation, are discussed in this literature review.

This literature review delineates the gradual unfolding process through which noted medical pioneers have endeavored to initiate healing by recognizing and honoring the unity of body and mind. Some of the courageous scientists responsible for introducing new and safe methods of reducing stress, anxiety, and depression are recognized in this review. These are pioneers in the field of health care who have dared to differ with opinions held by the strong currents of conventional medicine. They have focused on identifying underlying causes of stress, anxiety, and depression that are possibly overlooked by mainstream medicine. As the reader will see, these scientists have dedicated their lives to researching the phenomenon of relaxation, showing it to be a superior technique for stress reduction.

Stress—What Is It?

Stress is an ignorant state. It believes that everything is an emergency.

Natalie Goldberg

Stress is an organism's total response to environmental demands or pressures placed upon the body (Frey, 2002, p.1). Benson defines stress as "environmental conditions that require *behavioral adjustment*" (2001, p.41). Broadly speaking, stress is an automatic physical response to any stimulus (physical or psychological) that requires an adjustment to change. Shealy, in *Biogenics® Health Maintenance*, teaches that stress originates in the external world but the results of stress are experienced internally. We usually cannot control stress, but we can learn to control its *effects* (1986, p.9).

In *Irritation: the Destructive Fire* Torkom Saraydarian suggests that a poison, imperil, is produced by irritation. He argues that irritations we encounter result in imperil, or stress, slowly descending upon the nervous system and cutting off the channels of electricity,

which naturally flow through the nervous system's channels. The poison spreads continually, finally blocking the flow in the body's electrical system. These blockages cause serious physical and psychological problems whose roots then infiltrate into our nature (Saraydarian, 1991, p.6).

Although it is frequently discussed in our culture in generalities, stress can be experienced on several levels. These include physical, psychological, emotional, and spiritual, and according to Selye's theory, these are points of entry. Shealy states that any extreme pressure can invoke the stress response, whether it is physical such as temperature change or trauma, emotional such as depression or anger, chemical such as drug ingestion, electromagnetic such as specific energy field exposure, or even nuclear such as exposure to radiation (2005, p. 29).

The scientific community provides an industrious and attentive landscape for not only the definition of stress but also for its evaluation. It is possible to measure the physiologic effects of stress from a purely objective viewpoint. An individual experiencing stress can furnish subjective information to a researcher who can then provide resulting scientific information about it (Leidy, 1989, p.868-876).

Nevertheless, Benson laments that although most physicians might believe that stress affects health, they are not truly aware of the psychological, *nonmedical* literature regarding the effects of stress on people and that it can be measured. Because doctors are usually more attentive to patients' physical symptoms, they are prone to treat stress symptomatically by prescribing pharmaceuticals and/or verbal reassurance in the absence of a specific disease. Benson believes that physicians prescribe tranquilizers and other pharmaceutical medications

too often instead of seeking the inner *psychological component* of the patient's problem (Benson, 2001, p.7).

Hans Selye and Walter Cannon

In the 1930's a Canadian, Hans Selye, the "father" of stress research, first coined the word "stress," defining it as "the nonspecific response of the body to any demand" (1974). Stress results when an organism is called upon to re-adjust or adapt in order to maintain normalcy. It is the nonspecific response of the body to *any* demand, whether it is caused by, or results in, pleasant or unpleasant conditions. Stress is unlimited; it embodies both the negative and the positive concepts and aspects (Ibid.). According to Selye, the demand, or adaptation to change, includes good stress (*eustress*) as well as bad stress (*distress*). By adopting the right attitude he said a negative stress is converted into a positive one. In his writings Selye emphasizes that the body responds similarly to all kinds of pressure, regardless of whether a person perceives it as a positive or negative stress. From the body's point of view, stress is stress. The body simply responds (Hart, 1995, p.15).

Selye also distinguishes between *generalized* body reaction, which he refers to as General Adaptation Syndrome (or GAS), and the alarm reaction, "fight or flight," named by his teacher, Walter Cannon in 1929 (Cannon, 1929). Fight or flight *is* stress, according to Selye (Milliken, 2004, p.123). Cannon focuses his attention on strong emotions such as fear, which he says is the basis for the fight or flight mechanism. He notes that anger also ignites physiologic responses that prepare one for fight or flight (Cannon, 1929). According to Cannon the stress response (fight or flight) is a profound set of involuntary physiological changes that occur whenever we are faced with a stressful or threatening situation (Benson &

Stuart, 1992, p.33). Essentially the “*general adaptation syndrome*” encompasses all physiological changes that occur when one is in a stressed state (Milliken, 2004, p.124).

Stress-producing factors are known as *stressors* (Selye, 1979, p.562-566). Selye introduced this term to distinguish between stimulus and response since people tended to automatically perceive stress as just a discordant threat. Distinguishing among the various stressors is an important step in the scientific examination and analysis of stress (Selye, 1973, p.693-699). The brain’s perception that something desired is missing or threatened, or that there is uncertainty or a lack of necessary information, or that one is unable to secure positive outcomes or prevent negative outcomes, may all stimulate the stress response (Dossey, 1997).

Hence, the stress response is associated with basic survival. Arousal usually subsides after a threatening event. In contrast, the generalized response to stress does not subside as quickly when the arousal is not serving a worthwhile purpose. Human beings tend to maintain this generalized state of stress throughout the day, often without even realizing it. Because the body then operates in a constantly stressed mode, Selye is reported to have said, “Without stress there would be no life” (Milliken, 2004, p.123).

While many people believe it is more dangerous stress-wise to experience a major life trauma such as a divorce, a death, or a financial disaster (experiences that are generally short lived), it is actually the day-to-day on-going experiences, from the exciting challenges of the day to the normal ups and downs of living in the world that create far greater stress damage to the body (Hart, 1995, p.18). Although Selye proved that stress is necessary for basic survival, Shealy argues that “the most effective tool for health that you can use is the *reduction of stress [italics added]* in your own life” (2005, p.33). Hart suggests that before a

person can begin to work toward reducing stress, one must grasp the truth about how it permeates one's ordinary daily life even without experiencing a major life trauma.

Selye found that every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older. In addition, Selye insisted that "*adaptation to one agent is acquired at the expense of resistance to other agents*. That is, as one accommodates to a given stressor, other stressors may *require lower* thresholds for eliciting the alarm reaction" (Shealy, 1954). In summary, the body cannot afford the luxury of constant stress endemic to our culture.

The Stress Response

There is but one temple in the universe and that is the body of man.

Novalis

The body is indeed miraculous. By design it supports man's survival as each system plays its role to keep us alive in the face of danger. The stress response begins with a signal in the *hypothalamus*, a network of nerves perched above the brainstem, wired to the rest of the body through the *autonomic nervous system*. The autonomic nervous system controls involuntary functions in the body such as heartbeat, breathing, blood pressure, the dilation and constriction of specific blood vessels, and the bronchioles, the small airways in the lungs. The two tributaries of the autonomic nervous system are the *sympathetic nervous system* which revs up the body for action when there is a perceived danger and the *parasympathetic nervous system* which calms down the body, bringing it back to homeostasis, once the perceived danger is gone.

Upon perceiving danger, such as encountering the angry face and countenance of your boss, or seeing a masked man with a gun entering the bank where you are in line to cash a check, information is instantaneously processed by the hypothalamus which sends a chemical message down a pathway to the nearby *pituitary gland*. The cells in the pituitary are stimulated to send their own chemical messenger, *adrenocorticotrophic hormone* (ACTH), to the *adrenal glands* which then pour *cortisol* into the bloodstream. The adrenals also release surges of epinephrine and norepinephrine throughout the body via the sympathetic nervous system. There is a powerful triumvirate of the hypothalamus, pituitary gland, and adrenal glands, referred to as the HPA axis. This oversees numerous hormonal activities in the body and sustains a feedback loop which helps to switch off the stress response when levels of certain hormones become too high.

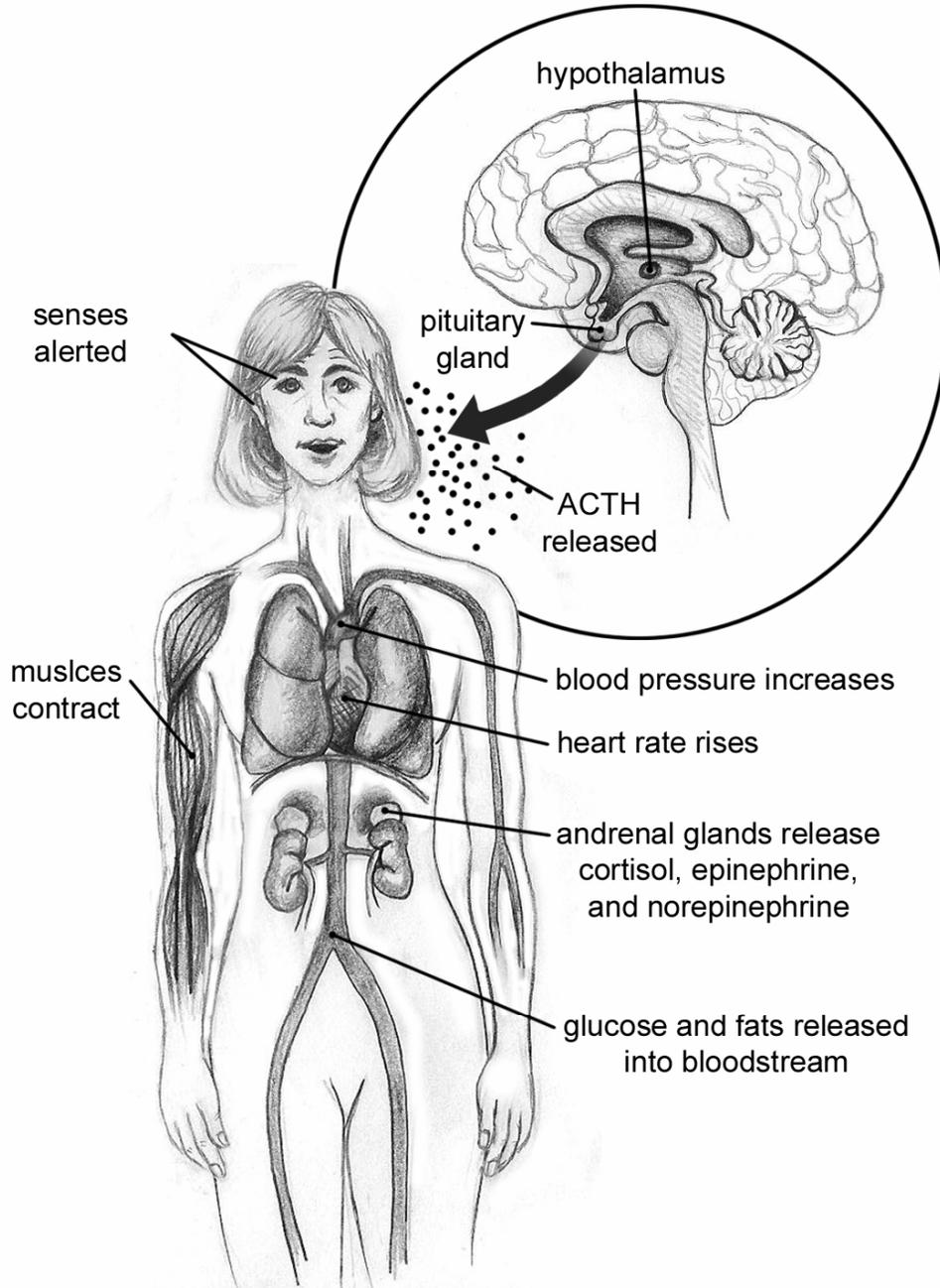
Once you encounter a perceived danger the stress hormones immediately race through the bloodstream, throughout your body so that you are prepared to fight or take flight. You breathe more rapidly due to your body taking in extra oxygen. Energy reserves in the form of glucose are released through the bloodstream from storage sites in the liver. Your senses are heightened, increasing your alertness. Your heart pounds strongly – up to five times its normal rate - and your blood pressure rises. Certain blood vessels constrict, directing the blood flow to the muscles and brain instead of to the skin and other organs. Glycogen is released from the liver to raise blood sugar. Platelets (blood cells) become stickier so that clots can form, in preparation for keeping you from bleeding to death due to an injury. Your muscles, including the little hair raising muscles under the skin, constrict in preparation for action focused on survival. The physiologic systems not needed for the emergency are suppressed; these include the stomach and digestion, sexual arousal, and new

cell production throughout the body. (After all, if you are close to death the meal you last ate can go undigested and the new cells you could have used are no longer necessary.)

The optimum situation in the body is that once your emergency is over the parasympathetic nervous system takes over. The purpose of the parasympathetic response is to slow down the heightened physical responses mentioned above, brought on by the sympathetic nervous system. Breathing slows down, the blood pressure drops due to the decreased strength of the heartbeat, and the blood flow returns to its regular pattern. Life as it was before the crisis resumes, as do your physical functions. Ideally this is the return to a balanced body, or the optimum physical state known as *homeostasis*.

Figure 1 on the following page illustrates the stress response as it has been outlined above.

Figure 1. Image of the Stress Response



The HPA axis plays an important role to invoke the stress response. When ACTH and cortisol are released the body is roused into action to confront the stressor. The result of these hormones surging through the body is widespread, among organs and muscles.

Causes of Stress

*The mind is its own place, and in itself,
can make a heaven of hell or a hell of heaven.*

John Milton

The Workplace

Although few would disagree that major traumas produce stress, other causative factors woven into the fiber of daily life also induce stress. For example, job stress is the leading cause of adult stress in America, according to several surveys (Rosch, 2002). Fears and pressures in the work force are steadily increasing; a Gallup Poll report in 2000 showed that 80% of workers felt job stress. Fourteen percent felt tempted to hit a co-worker and 25% said they felt inclined to scream at work. In a 2000 Integra Survey 65% of workers reported that workplace stress had caused difficulties. Nineteen percent had quit a previous position because of job stress and nearly one in four had been forced to tears due to stress at work (Ibid.).

Anxiety and depression are psychological emotional reactions to stress; their relationship is demonstrated in current medical and psychiatric research which was discussed in the Introduction. A study by Advance PCS, the nation's leading health improvement firm, and a Forbes Platinum 400 COMPANY, shows that in the United States workers with *depressive disorders* cost employers \$44 billion in lost productive time, compared to \$13 billion for those without depression (Retrieved September 24, 2004 at <http://www.shareholder.com/cm/ReleaseDetail.cfm?ReleaseID=130136>). This study, published in the Journal of the American Medical Association, ranks depression among the most costly of conditions for employers and indicates the necessity for effective intervention.

It shows that 9.4 % of workers struggle with depression; this is nearly two times more prevalent among women workers. On average, employees lose 5.6 productive hours per week in work absences and reduced performance time due to depression, in comparison to an expected 1.5 hours per week for those who are depression free. During a 40 hour week, 14% of a depressed employee's time is nonproductive (Ibid.).

A Reuters Limited survey reports that stress in the work place is estimated to cost U.S. industry \$300 billion annually in absenteeism, health costs, and programs to assist workers in stress management while unemployment rises and businesses continue to downsize. Job related fears cause stress, which perpetuates Americans' complaints about muscular pain, fatigue, chronic headaches, back pain, insomnia, and emotional strain. Some are motivated to seek therapy.

Reuters estimates that 1 million workers per day in America are absent because of stress. Mercer Management Consulting reports that despite the fact that physical problems cause most disability in the work place, 70% of employers report that stress is now the fastest growing cause of disability (Retrieved Sept. 29, 2004 at <http://www.msnbc.com/news/95004.asp>).

It is possible that the escalating stress in the workplace is partially due to the fact that Americans are working more hours than ever before. An International Labor Organization study reports that Americans worked an extra 40-hour week in 2000 as compared to the previous decade. The ILO reports that according to the most current available data the average worker in Australia, Canada, Japan or Mexico was on the job approximately 100 hours less than the average American per year; this is roughly two-and-a-half weeks less. Employees in Brazil and Britain worked approximately five weeks less than Americans and

Germans worked about twelve-and-a-half weeks less (Retrieved October 20, 2006 from <http://archives.cnn.com/2001/CAREER/trends/08/30/ilo.study/>).

Forty percent of American workers reported that the climate in their office was “most like a real life survivor program.” Job insecurity is a constant threat to Americans. On September 10, 2001, the day before the bombing of the World Trade Center, reports were released which stated, “more than one million Americans lost their jobs this year- 83% higher than last year” (Rosch, 2002). These are indeed stressful times for America’s work force.

Stress --Not Only in the Workplace

While the workplace constitutes the largest percentage of stressed out people, there are many others elsewhere who also feel the strain. Stress has stretched its arms across the entire population, touching children, teenagers, college students, and the elderly. Reasons cited are “crimes, threats to personal safety, pernicious peer pressures that lead to substance abuse...isolation and loneliness, erosion of family and religious values and ties; the loss of other strong sources of social support that are powerful stress busters” (Rosch, 2002).

Data collected in many countries suggests that women consistently report greater distress than do men. One study of approximately 1,100 American adults published in the *Journal of Personality and Social Psychology* in 1999 found that women were more prone to experience chronic stress than men, and to feel that their lives were out of their control (Dadoly et al., 2002, p.28). Today there is no age group that does not feel the effects of stress. This is all bad news for a society which spent \$9.4 billion in 1996 trying to stay de-stressed (Gopal & Daurat, 1998).

Psychological Component to the Cause of Stress

*Men are disturbed not by things that happen, but by
their opinion of the things that happen.*

Epictetus 55-135 BC

Paul J. Rosch, editor of the Newsletter of the American Institute of STRESS, reports that stress today is more pervasive, persistent, and insidious because it is initiated primarily from threats that are *psychological* in nature rather than physical. Today's stress is concerned with ingrained and immediate reactions which were originally designed as beneficial to us and over which we have no authority. These reactions cause heart rate and blood pressure to soar in order to increase the flow of blood to the brain to improve decision-making. Blood sugar rises to furnish more fuel for energy. Blood is shunted away from the gut, where it is not immediately needed for digestion, to the large muscles of the arms and legs. This provides more strength for combat or greater speed in escaping from potential peril but this is not beneficial to us on a regular basis (Rosch, 1996).

In *Full Catastrophe Living*, Jon Kabat-Zinn agrees that much of the stress people experience today originates from threats, real and imagined, which he claims are related to our perceived social status. The stress reaction kicks in *even when there is not a life-threatening situation in our midst*. Just the activity of *feeling* threatened is enough to elicit the stress reaction. In 1993 researchers at Temple University showed that psychological (mental) stress is far more dangerous than physical stress. This can cause problems for us instead of giving us extra energy for problem resolution (Kabat-Zinn, 1991). Once the fight or flight response is elicited we react quickly and sometimes without thinking clearly. This is due to the large volume of epinephrine released in the body as a result of severe mentally

induced stress (Morse, 1993, p.111). Our bodies still react with the primitive stress response which is dangerous (even deadly) when triggered continually throughout the day.

In *Total Life Stress and Symptomology* Shealy says the surge of epinephrine and increased blood sugar prepares the body for fight or flight. Today, however, people do not respond to stressors by fighting or fleeing. Due to the stressed person being left with an increased blood sugar, the pancreas is forced to release additional insulin; this results in both hyperinsulinemia and/or hypoglycemia. These can trigger a new stress response, thus invoking a repeat of the whole vicious cycle (Shealy,1954, p.117).

Common Symptoms of Stress and How Stress Affects the Body

Common symptoms of stress are sometimes considered ‘normal’ ways of being for many stressed people. To some extent hyperarousal has become a permanent state of being for people in this contemporary culture. Many people feel tense and anxious continually, suffering from chronic muscle tension in the face, shoulders, jaw, and hands. Heart rate is often elevated to a state of hyperarousal. Some people feel shaky inside or feel butterflies in the stomach much of the time; others feel heart palpitations or even feel their heart skipping a beat. Chronic sweaty palms or an urge to run are also symptomatic of feeling stress inside. In modern man and woman, these responses eventually can contribute to strokes, heart attacks, hypertension, diabetes, ulcers, neck or lower back pain, and a host of other “Diseases of Civilization” (Rosch, 1996). In *Mind as Healer Mind as Slayer*, Pelletier suggests that stress disorders usually do not occur immediately, but instead are developmental and generally occur after a relatively long period of living with stress (1976, p.13).

Whether sudden or gradual, stress, to be sure, affects our bodies negatively. The sensitivity of the sympathetic nervous system (SNS) partially determines one's emotional and physical reactions to stress. The fight or flight response to stress increases pulse rate, respiration, muscle tension, glandular function, and blood circulation. Recurrent anxiety symptoms and either minor or major lifestyle changes, emotional upsets, or even a negatively charged thought may cause the SNS to overreact. A particularly stressful lifestyle may keep the SNS on the alert, ever ready to spring into action after any rising crisis. This constant alertness creates a perpetual state of tension. When a person is in this mode, he or she tends to react to small or insignificant stresses similar to how one would react to an emergency. Due to the fight or flight response, energy is accumulated in the body so that it can deal with the crisis situation. This energy needs to be released in order that the body might return to balance, or homeostasis (Lark, 2003).

Following is a list of health problems that arise due to stress and are exacerbated by stress:

- Allergic skin reactions
- Anger and Hostility
- Anxiety
- Constipation
- Cough
- Depression (mild and moderate)
- Diabetes mellitus
- Dizziness
- Heart problems such as angina, cardiac arrhythmias
- Heartburn
- Hot flashes of menopause
- Hypertension
- Infertility
- Insomnia and resulting fatigue
- Infectious diseases, such as colds and herpes
- Irregular heartbeats

Irritable bowel syndrome

“Morning sickness,” the nausea and vomiting of pregnancy

Menopausal symptoms, such as hot flashes

Nervousness

Pain of any sort, including backaches, headaches, abdominal pain, muscle pain, joint aches, postoperative pain, and chronic pain caused by many conditions

Postoperative swelling

Premenstrual syndrome

Rheumatoid arthritis

Side effects of Aids

Side effects of cancer and cancer treatments

Slow wound healing

Ulcers

(Benson, 2001, p.1; Dadoly, 2002, p.32).

Total Life Stress and Symptomatology

The Total Life Stress Test (TLST), developed by Norman Shealy, helps to measure effects of chemical, physical, and emotional stress in individuals' lives by comparing the TLST score with the total number of symptoms that individuals have. A TLST score of 50 or more indicates an 86% chance of having 20 or more symptoms. A score of 75 or more indicates a 90% chance of having 20 or more symptoms and an 82% chance of having 30 or more symptoms. High levels of symptomatology such as these indicate a significant dysfunctioning of the autonomic nervous system and might be the precursor of disease or illness. The Total Life Stress Test is an excellent tool to use to help people understand the importance of reducing stress before the onset of illness.

Selye produced significant research supporting his proposal that stress included physical, chemical, and psychological/emotional stressors. He arrived at the conclusion that “*any* systemic stress elicits a similar syndrome with *general* manifestation. Selye also emphasized that individuals break down in their ‘weakest organ,’ or weakest organ system,

whatever the total stress” (Shealy, 1954, p.112). In accordance to Selye’s findings Shealy’s test measures physical, chemical, and psychological/emotional stressors. This test appears as Figure 2 on the following pages. Additional information regarding this test is found in *90 Days to Stress-Free Living* (Shealy, 1999, pp. 20-25).

Figure 2. Total Life Stress Test

These will help to give you an understanding of the most critical stressors in your life. You can spend some extra time dealing with those stressors as you carry out your 90-day programme.

PERSONAL STRESS ASSESSMENT

Total Life Stress Test

Name _____ Date _____

Circle the answers appropriate for you.

I. Chemical Stress

A. Dietary Stress

Average daily sugar consumption	(total used)
Sugar added to food or drink (teaspoons)	0 1 2 3 4
Bun, piece of pie/cake, other dessert (no. per day)	0 1 2 3 4
Coke or can of fizzy drink, chocolate bar (no. per day)	0 1 2 3 4
Banana split, commercial milk shake, sundae etc (no. per day)	0 1 2 3 4
White flour (white bread, spaghetti etc) (circle 2 if you use it)	2
Average daily salt consumption	
I add salt to my food	0 1 2 3 4
I eat salty food	0 1 2 3 4
Average daily caffeine consumption (0 = none; 4 = 4 or more/day)	
Coffee (1 point per cup)	0 1 2 3 4
Tea (1 point per cup)	0 1 2 3 4
Cola drink (1 point per glass)	0 1 2 3 4
Caffeine tables (1 point each)	0 1 2 3 4
Dietary Subtotal	_____

B. Other Chemical Stress

(Circle the number by each statement that applies)

Drinking water

Your water is chlorinated	1
Your water is fluoridated	2

Soil and air pollution

Live within 10 miles of city of 500,000 or more	4
Live within 10 miles of city of 250,000 or more	2
Live within 10 miles of city of 50,000 or more	2
Live in the country but pesticides, herbicides, and/or chemical fertilizer used	4
Exposed to cigarette smoke of someone else more than 1 hour per day	4

Drugs (for any amount of usage, circle 4)

Antidepressants	4
Tranquillizers	4
Sleeping pills	4
Narcotics	4
Other pain relievers	4
Marijuana or other illegal drugs	4

Drug Subtotal _____

Nicotine (circle those that apply)

3-10 cigarettes per day	4
11-20 cigarettes per day	8
21-30 cigarettes per day	10
31-40 cigarettes per day	20
Over 40 cigarettes per day	40
I smoke cigars	4
I smoke a pipe	4
I use chewing tobacco	8

Nicotine Subtotal _____

Average daily alcohol consumption

1 drink = 1 measure of spirits; or 1 pint beer; or 1 glass of wine

1 drink per day	2
2 drinks per day	4
3 or more drinks per day	20

Alcohol Subtotal _____

II. Physical Stress

Weight (circle that which applies)

Underweight more than 10lb	5
10-15lb overweight	5
16-25lb overweight	10

26–40lb overweight	20
More than 40lb overweight	40
Activity (circle that which applies)	
Adequate exercise = doubling heartbeat and/or sweating a minimum of 30 minutes per workout	
Adequate exercise 3 days or more per week	0
Some physical exercise 1 or 2 days per week	15
No regular exercise	40
Work stress (circle that which applies)	
Sit most of the day	3
Industrial/factory worker	3
Overnight travel more than once a week	5
Work more than 50 hours per week	10
Work varying shifts	10
Work night shift	5
Heavy labour – physically fit	0
Heavy labour – not physically fit	40
Physical Stress Subtotal _____	

III. Attitudinal Stress

A. Holmes-Rahe Social Readjustment Rating

(Circle those events listed below which you have experienced during the past 12 months.)

Death of a spouse	10
Divorce	7
Marital separation	6
Prison term	6
Death of a close family member	5
Personal injury or illness	5
Marriage	5
Fired at work	5
Marital reconciliation	5
Retirement	5
Change in health of family member	4
Pregnancy	4
Sexual difficulties	4
Gain of new family member	4
Business readjustment	4

Change in financial state	4
Death of a close friend	4
Change to different line of work	4
Change in number of arguments with spouse	4
Housing costs over 40% of income	3
Foreclosure of mortgage or borrowing	3
Change in responsibilities at work	3
Son or daughter leaving home	3
Trouble with in-laws	3
Outstanding personal achievement	2
Spouse begins or stops work	3
Begin or end school	3
Change in living conditions	3
Revision of personal habits	2
Trouble with boss	3
Change in work hours or conditions	2
Change in residence	2
Change in schools	2
Change in recreation	2
Change in church activities	2
Change in social activities	2
Housing costs over 25% of income	1
Change in sleeping habits	2
Change in eating habits	1
Vacation, especially if away from home	1
Christmas, or other major holiday	1
Minor violations of the law	1

Total points? _____

B. *Other Emotional Stress* (circle those that apply)

Sleep	
Less than 7 hours per night	4
Usually 7-8 hours per night	0
More than 8 hours per night	2
Relaxation	
Relax only during sleep	4
Relax or meditate at least 20 minutes per day	0
Frustration at work	
Enjoy work	0
Mildly frustrated by job	1
Moderately frustrated by job	4

Very frustrated by job					8
Lack of authority at job					8
Boss doesn't trust me					8
Marital status					
Married, happily					0
Married, moderately unhappy					4
Married, very unhappy					8
Unmarried man over 30					2
Unmarried woman over 30					1
Usual mood					
Happy, well adjusted					0
Moderately angry, depressed or frustrated					4
Very angry, depressed, or frustrated					8
Overall attitude					
Degree of feeling of hopelessness	0	1	2	3	4
Degree of feeling depressed	0	1	2	3	4
Inability to achieve major goal	0	1	2	3	4
Inability to achieve close love/intimacy	0	1	2	3	4
Degree to which I am frustrated, annoyed, and/or angry because someone attacked or harmed me or prevented me from happiness	0	1	2	3	4
(Below, score a 0 if you agree; score a 1, 2, 3, or 4 if you disagree.)					
Satisfied and in control of my life	0	1	2	3	4
Experience happiness regularly	0	1	2	3	4
Believe I am responsible for my happiness	0	1	2	3	4
Believe and experience happiness is an inside job	0	1	2	3	4
Any other major emotional stress not mentioned above.					
You judge intensity 0-10 _____					
Other Emotional Stress Subtotal					_____
Attitudinal Stress Subtotal					_____

Total Life Stress

I. Chemical Total _____
 II. Physical Total _____
 III. Attitudinal Total _____

Total Life Stress Total _____

Scoring and Goal Setting

Dietary Subtotal

For a score above 10, read the nutritional section several times.

Drug Subtotal

For a score of 4 or more, you need this programme!

Nicotine

For any score, you need this programme. Plan to give up completely by Day 30.

Alcohol

For a score above 6, you need this programme. Plan to give up completely by Day 30.

Physical Stress Subtotal

For a score of 40 or more, read the physical exercise section several times.

Social Readjustment Rating

For a score of 30 or more, you need this programme.

Other Emotional Stress

For a score of 10 or more, you'll benefit from this programme.

List here your most important Goals

Holmes –Rahe Life Stress Inventory

During the 1950's and 1960's researchers were successful in demonstrating and documenting the positive relationship between the occurrence of specific life events and onset of illness. The quantity of life change (stress) that patients experience during the 2 years prior to the onset of an illness appears to affect the seriousness of the illness. That there exists a significant positive relationship of life events to the magnitude of illness is now unarguable (Wyer, A.R., Masuda, M., & Holmes, T., 1971, p.115).

After years of research, the Homes-Rahe life stress inventory, the social readjustment rating scale, was developed. This is an effective tool for measuring life stress and predicting the chance of a related illness. It is composed of 43 life events which are assigned a value according to their magnitude of stress on the individual as derived from clinical studies in the late 1960's. Holmes and Rahe found that a score less than 150 predicts a 30% chance of developing a stress-related illness; a score of 150-299 predicts a 50% chance of illness; a score over 300 predicts an 80% chance of illness (Retrieved November 20, 2006 from <http://www.cop.ufl.edu/safezone/dotyhome/wellness/HolRah.htm>). The Holmes-Rahe Life stress inventory appears as Figure 3 on the following page.

Figure 3. Holmes-Rahe Stress Inventory

The Holmes-Rahe Life Stress Inventory
The Social Readjustment Rating Scale

INSTRUCTIONS: Mark down the point value of each of these life events that has happened to you during the previous year. Total these associated points.

Life Event	Mean Value
1. Death of spouse	100
2. Divorce	73
3. Marital Separation from mate	65
4. Detention in jail or other institution	63
5. Death of a close family member	63
6. Major personal injury or illness	53
7. Marriage	50
8. Being fired at work	47
9. Marital reconciliation with mate	45
10. Retirement from work	45
11. Major change in the health or behavior of a family member	44
12. Pregnancy	40
13. Sexual Difficulties	39
14. Gaining a new family member (i.e., birth, adoption, older adult moving in, etc)	39
15. Major business readjustment	39
16. Major change in financial state (i.e., a lot worse or better off than usual)	38
17. Death of a close friend	37
18. Changing to a different line of work	36
19. Major change in the number of arguments w/spouse (i.e., either a lot more or a lot less than usual regarding child rearing, personal habits, etc.)	35
20. Taking on a mortgage (for home, business, etc..)	31
21. Foreclosure on a mortgage or loan	30
22. Major change in responsibilities at work (i.e. promotion, demotion, etc.)	29
23. Son or daughter leaving home (marriage, attending college, joined mil.)	29
24. In-law troubles	29
25. Outstanding personal achievement	28
26. Spouse beginning or ceasing work outside the home	26
27. Beginning or ceasing formal schooling	26
28. Major change in living condition (new home, remodeling, deterioration of neighborhood or home etc.)	25
29. Revision of personal habits (dress manners, associations, quitting smoking)	24
30. Troubles with the boss	23
31. Major changes in working hours or conditions	20
32. Changes in residence	20
33. Changing to a new school	20
34. Major change in usual type and/or amount of recreation	19
35. Major change in church activity (i.e., a lot more or less than usual)	19
36. Major change in social activities (clubs, movies, visiting, etc.)	18
37. Taking on a loan (car, tv, freezer, etc)	17
38. Major change in sleeping habits (a lot more or a lot less than usual)	16
39. Major change in number of family get-togethers ("")	15
40. Major change in eating habits (a lot more or less food intake, or very different meal hours or surroundings)	15
41. Vacation	13
42. Major holidays	12
43. Minor violations of the law (traffic tickets, jaywalking, disturbing the peace, etc)	11

Now, add up all the points you have to find your score.

150pts or less means a relatively low amount of life change and a low susceptibility to stress-induced health breakdown.

150 to 300 pts implies about a 50% chance of a major health breakdown in the next 2 years.

300pts or more raises the odds to about 80%, according to the Holmes-Rahe statistical prediction model.

Sources: Adapted from Thomas Holmes and Richard Rahe. Holmes-Rahe Social Readjustment Rating Scale, *Journal of Psychosomatic Research*, Vol II, 1967.

Anxiety and Depression

*Your vision will become clear only
When you can look into your own heart.
Who looks outside, dreams;
Who looks inside, awakens.*

Carl Gustav Jung

Anxiety and depression are two major psychological responses to stress. Both may be intensified or even caused by accumulated stress (Dadoly, 2002, p.6).

Anxiety

Nothing in the affairs of men is worthy of great anxiety.

Plato

Anxiety is a nonspecific feeling of unease, apprehension or worry. It can be associated with physical symptoms such as elevated heart beat, feeling faint, and shakiness. It can be a normal reaction to stress or can be part of a bigger problem. Anxiety is experienced as a feeling of dread, mistrust, or continual underlying fear about a variety of things, such as traveling away from home (agoraphobia), undesired occurrences (panic attacks), daily life in general (generalized anxiety), anticipation of danger (obsessive compulsive disorder), or fear of others (social anxiety) (Pulver, 2000). An anxious person experiences excessive feelings and fears that are not proportionate to a particular situation. When these intense feelings of worry and concern continue over a period of time, interfering with the ability to function effectively day-to-day, an anxiety disorder often results (Wein, 2002).

The National Institute of Mental Health (NIMH) reports that anxiety is a normal reaction to stress. According to the NIMH, anxiety assists one in dealing with a tense situation and helps him or her work harder toward goal fulfillment. The NIMH states that

stress helps in coping with life. However, when anxiety becomes excessive, it can become a disabling disorder.

Anxiety disorders are more prevalent in our culture than many know, with over 19.1 million adults in America suffering with it (Retrieved December 12, 2005 from <http://www.nih.gov/news/WordonHealth/nov2002/anxietydisorders.htm>). NIMH reports that one in eight Americans aged eighteen to fifty-four now suffers with an anxiety disorder and one in ten American women takes anti-anxiety or antidepressant drugs. The use of these drugs has almost tripled since 1996 (Childre & Rozman, 2006, p.14). Anxiety disorders frequently occur with depressive disorders and NIMH reports that many people have more than one anxiety disorder (Retrieved January 27, 2007 from <http://www.nimh.nih.gov/publicat/numbers.cfm>).

Some researchers suggest that social anxiety disorder is the *most* prevalent of any anxiety disorder and that after depression and alcohol abuse, it is the third most common psychiatric disorder. The duration of social anxiety disorder is often life-long, and there is a high comorbidity with other psychiatric disorders (Pollock, 2001, p.1). There are other researchers who recognize Generalized Anxiety Disorder (GAD) as the most prevalent among all anxiety disorders, although GAD is not usually considered a principle diagnosis. Six months or more of chronic, exaggerated worry and tension that is unfounded characterizes GAD. It also appears to be a life-long disorder and an ambiguous condition to diagnose (Schweizer, 1995, p.845).

Undercurrents of anxiety have a way of initiating addictive behaviors around alcohol, food, sex, drugs, shopping, or engaging in extremes. Addictions offer only temporary relief

from obsessive feelings and thoughts. The worrisome thoughts and anxious feelings which lie deeper within often originate from a lack of self esteem and a lack of security.

Childre, in *Transforming Anxiety*, suggests that the more one experiences anxiety the more anxiety becomes imprinted in the neural circuitry. Eventually anxiety manifests as an automatic response to stressful feelings and thoughts. Our modern world, with its emphasis on 'doing,' has conditioned people to believe they must pack their days with perpetual activity and consequently, stress; they must achieve too much, juggle too much, in far too little time. Unable to keep up, the emotional system develops chronic emotional oversensitivity and reactivity that gives way to anxiety. When these conditions are added to cultural notions of economic insecurity, to the fear of terrorism, and to the fear of epidemics of disease, it is no wonder that people today feel more on edge and anxious than ever before (Childre & Rozman, 2006, p.14).

Depression

The mass of men lead lives of quiet desperation.

Henry David Thoreau

Depression is a serious medical illness. “[It] is the most common illness in the world and appears to be an underlying component of almost all other illnesses. Significant chronic depression essentially weakens the immune system and thus leads to multiple disturbances in the entire metabolic control system” (Shealy, 2005, p.95).

Reports from the NIMH claim that depression is one of the four leading causes of disability in the United States, and according to the 1998 United States Census 18.8 million Americans or about 9.5% of the adult population suffer from depression in a given year. The

American Institute of Stress reported in February 1995 that over 40 million people in America suffer with depression, a more liberal figure than the NIMH reports (18.8 million) (Rosch, 1994). The estimated annual expense to Americans for depressive disorders is \$53 billion in direct and indirect costs. This is second only to cancer and heart disease (Retrieved October 28, 2006 at <http://www.mental-health-matters.com/articles/article.php?artID=114>). Women are about three times more likely to develop depression than are men (Kaplan & Sadock as cited in Sanders, 2000), however, depressed men are five times more likely to commit suicide (Retrieved October 28, 2006 at <http://www.mental-health-matters.com/articles/article.php?artID=114>).

Depression is characterized by a feeling of deep, overwhelming sadness that won't leave. People who are depressed often feel a sense of complete and utter hopelessness, a lack of energy most of the time, and a general loss of interest in life. With depression, one loses the ability to feel any emotion strongly. Ability to concentrate and decision-making skills are compromised, self esteem often declines, and some depressed people entertain thoughts of suicide (Milliken & Honeycutt, 2004, p.219).

Among psychiatric disorders depression is one of the most common and debilitating; however, one report shows that only 20% to 30% of patients with emotional distress, behavioral problems, family problems, or sexual problems revealed this information about themselves to their family practitioners. When patients present with clear-cut psychiatric symptoms, depression is easily recognized; however, some individuals have only physical symptoms with no apparent biological cause (Good, Good & Cleary, 1987).

Not only does depression tax the body emotionally, but it also weakens the immune system, leading to multiple disturbances in the metabolic system. Depression, anxiety, and

anger profoundly affect the pituitary which is responsible for orchestrating all the body's stimulating hormones. Essentially hormone production is increased, generally leading to changes in epinephrine and norepinephrine levels which ultimately affect the body's reaction to stress. The result is a physiology similar to that of one who is profoundly stressed twenty four hours a day (Shealy, 2005, p.97). It is evident that a vicious cycle is set up among depression, anxiety, anger, hormones, and stress; this is destructive and threatening to good health and well-being.

Holistic Approach Toward Healing

*Everyone has a doctor in him or her;
we just have to help it in its work.
The natural healing force within each one of us is the greatest force in getting well.*

Hippocrates

Until recently our society's method of treating illness has been influenced by the 17th century philosopher, Rene Descartes, who viewed the body as a machine consisting of many parts. Because Descartes perceived disease as being the result of a breakdown of one of the parts (of the machine), fixing that part would repair the entire machine. It follows, then, that the restored health of a human being depended upon repairing the broken part. If a person is an entity of separate, autonomous parts, then diseases of the mind have nothing to do with the body since each part, according to Descartes' paradigm, is distinctly independent of the others.

Descartes thought depressive disorders were a punishment from God. He suggested that the church should take responsibility for curing the 'mentally ill' since, in his view, the mind was beyond human comprehension. Linking the church with problems of the human

mind acknowledges a possibility that divine intervention, or some force greater than all the independent parts of the human body, is needed for treating disease and curing not only all the parts of the body, but also the mentally ill mind (Benson & Stark, 1996, p.67). By calling attention to the inconsistency of his blueprint for curing human disease, that the body's independent, broken parts just may depend on some unifying force greater than each of those parts, Descartes points the way toward what we now know as holistic medicine.

Three centuries later, both Jan Christiaan Smuts (Prime Minister of South Africa in 1926) and Evarts G. Loomis (1910-2003), although working independently of each other, nevertheless amplified the same spiritual aspect of Descartes' model for treating depressive disorders and mental illness. In his book, *Holism and Evolution*, Smuts outlined a way of viewing living things as "entities greater than and different from the sum of their parts" (Walter, 1999, p.1). Subsequently, Loomis "gave much thought to the practical application of a therapy that would include the physical, mental, and spiritual aspects of illness" (Ibid.). Having been raised in a spiritual and humanitarian environment, Loomis quite naturally found these concepts beneficial to an individual's own healing process (Ibid., p.1).

The American Holistic Medical Association

*The doctor of the future will give no medicine, but will interest his patients in the care
of the human frame,
in diet, and in the cause and prevention of disease.*

Thomas Edison

Because of his success, Loomis decided to create a place where he could expand and elaborate on his holistic approach of treating ill people. In 1958 he established Meadowlark (located in California) as America's first holistic medical live-in retreat center. From this

location Loomis worked not only to heal patients, but also to train medical students and to provide a place for other like-minded doctors and healers to meet (Ibid., p.2). In 1977, doctors, C. Norman Shealy, Gladys Taylor McGarey, Bill McGarey, and Gerald Looney gathered at Meadowlark and founded the American Holistic Medical Association (AHMA). Shealy, in his role as founding president, voiced its mission, to “bring spirituality into medicine” (N. Shealy, personal communication, May 17, 2004).

The AHMA continues to offer an alternative to reductionist western medicine, which is informed by the Newtonian/Cartesian ideas that a human being is the sum of his or her parts. Even though Descartes hinted that we are possibly more than that, it was not until the 20th century that we see this specific concept practically applied to a patient treatment regime that acknowledges spirituality as an integral force in the healing process. Descartes called for the church’s intervention, but the AHMA takes away that outside establishment and teaches patients how to *empower themselves* by means of each person’s own spiritual process.

In this manner the AHMA has become the medical arm of a new wave of healers who recognize that human beings are *greater than*, instead of equal to, the sum of our parts. This basic philosophical concept provides the impetus for healers to include all sorts of therapies that do more than treat each isolated broken part of a human being. Holistic medicine reacts to western medicine’s reductionism by acknowledging that each person is a collection of interconnected (not separated) parts. We are completely interconnected. According to holism, every cell in us is affected by what goes on with every other cell. In this way holistic medicine stands in stark contrast to the traditional western reductionist approach to healing.

Five Fundamental Criteria of Holistic Medicine

In *Mind as Healer Mind as Slayer*, Kenneth Pelletier explains five fundamental criteria necessary to holistic medicine. These criteria provide a foreground to the heart of holistic medicine.

1. All illnesses and states of health are construed as psychosomatic.

Holistic medicine uses this word to communicate the concept of “fundamental interaction between mind and body which is involved in all diseases and all processes affecting health and maintenance” (Pelletier, 1977, p.12).

2. Each individual is unique and represents a complex interaction of body, mind and spirit.

The best way to understand illness is to see it as interference within the dynamic balance of the relationships of body, mind, and spirit. This complex balance is crucially important to the holistic approach since states of health exist when these components are functioning harmoniously and illness occurs when stress interrupts the balance of this delicate complexity (Ibid., p.318).

3. The holistic health practitioner and the patient are in partnership as they share the responsibility for the process of healing.

The patient actively makes decisions that enable him to become healthier in all aspects of his life. The holistic practitioner maximizes the biological and psychological conditions in order to maintain an ongoing program toward healing (Ibid., p.319).

4. Health care is not the exclusive province or responsibility of orthodox medicine.

Conventional medical focus is on treatment of the illness and the removal of the overt manifestations of it. Holistic medicine believes that equally important is the consideration of the patient’s lifestyle, as well as other aspects of his life, and how they relate to the illness. It

is always possible that the patient's psychosocial environment might be more causative to his distress than the symptom itself (Ibid.).

5. Illness is interpreted as an opportunity for the patient to learn more about himself and his fundamental values.

Holistic medicine's view of illness takes into consideration the entire lifespan of each individual patient. Identical disorders in various different patients must be treated differently because every individual is perceived as a unique spiritual being. Encounters with pain, disease and even the likelihood of death can affect monumental growth in a patient. It is part of the holistic practitioner's mindset to assist patients in developing a wider and deeper vision of their illness and themselves, which actually can help one endure the psychological difficulties presented by the illness (Ibid., p. 320).

Health is the result of harmonious balance of multiple factors, many external and a few internal. The most potent external influence is stress, which affects the entire body and mind; the most influential inner strength is a regular feeling of equanimity. Whenever this inner calm is absent, stress manifests as distress and adversely affects health (Shealy, 1986, p.10).

Holistic practitioners of any healing or health enhancing modality emphasize the importance of the client assuming a more responsible role in his/her healing process. Holistic approaches focus on increasing self-awareness and on being proactive regarding health maintenance and healthy lifestyle adjustments. The holistic model encourages individuals to gain insight and control over patterns of thoughts and behaviors which affect vital energy patterns, compromising one's health. Ultimately the goal is to transcend negative energy

patterns and develop positive, healthy lifestyle habits which in turn heighten vital energy and enhance good health.

Progressive Relaxation

If at first, the idea is not absurd, then there is no hope for it.

Albert Einstein

Edmund Jacobson

Physician Edmond Jacobson developed Progressive Relaxation in the 1920's. He consistently conceptualizes anxiety and relaxation as incompatible physiological states, defined by muscle tension levels. Jacobson developed an effective method, progressive relaxation, to relax and reduce anxiety (Jacobson, 1938, p.19). Through exhaustive research he found that if people could train their muscles to relax using his precise techniques, mental and physical relaxation would result. The ultimate goal is for one to achieve the state of habitual relaxation; his efforts were geared toward teaching patients the *skill* of relaxation (Ibid., p.3). While his patients were in a state of deep muscular and mental relaxation, Jacobson observed excellent clinical results for treatment of numerous conditions such as: mucous colitis, spastic esophagus, chronic insomnia, compulsion neurosis, mild phobias, neurasthenia, easy fatigability, anxiety neurosis, cardiac neurosis, compulsive tic, depression, Grave's disease, hypochondriasis, generalized spastic paresis, stuttering, and stammering.

This technique seeks to achieve increased control over skeletal muscle until a subject is able to induce very low levels of tension in the major muscle groups, such as the arms and legs. Jacobson's argument is that anxiety neurosis and other related diseases are caused by or aggravated by skeletal muscle contraction, whereas muscular relaxation produces opposite

physiologic states. Some claim that autonomic effects of relaxation training have been demonstrated by Jacobson, but only in patients given extensive relaxation training (Connor, 1974, p. 591). Nevertheless it appears that Jacobson succeeded in demonstrating that “deep muscular relaxation, even without programmed mental activity or psychophysiological programming, can lead to a significant improvement in autonomic nervous system function and improvement in many of the psychosomatic or psychophysiological illnesses” (Shealy, 1986, p.43).

Relaxation According to Jacobson

Prior to Jacobson’s work, rest was known by some as a panacea for fatigue, for strain on the heart and blood vessels, and for quieting the nervous system. Jacobson, on the other hand, concerned that rest was perceived as a diversion or change of scenery, saw relaxation as a physiologic milieu for bringing one more directly and efficiently to a state of quieting the entire nervous system. Jacobson focused on the phenomena, *neuromuscular hypertension*, because it could be observed and measured (Jacobson, 1938, p.7). He observed that many people lived in a chronic or intermittent state of hypertension with frequent symptoms of insomnia or emotional irritation.

Often seen as restlessness, delirium, or insomnia, nervous hypertension is detectable in a whole range of diseases, according to Jacobson. He noted that neuromuscular hypertension has an interesting, intricate relationship with disease in that it precedes some diseases even as part of or the entire cause. Other diseases also manifest it either during or after the disease (Ibid., p.16).

Jacobson's seminal work, *Progressive Relaxation*, is a detailed treatise on neuromuscular hypertension, its deleterious effect on health, and how progressive relaxation is the successful and correct response for treating this condition. The technique involves tensing and relaxing specific muscle groups throughout the body in a particular sequence. This is an exercise, both tedious and arduous, requiring strict concentration and a degree of perfection in performance. Becoming proficient in progressive relaxation allows one to get rid of residual tension, which is the essential feature of the technique. Residual tension is "a fine tonic contraction along with slight movements or reflexes. Often it is reflexly stimulated, as by distress or pain, yet under these conditions relaxation is to be sought" (Ibid., p.29). The tension often disappears gradually, within as few as fifteen minutes of practicing progressive relaxation.

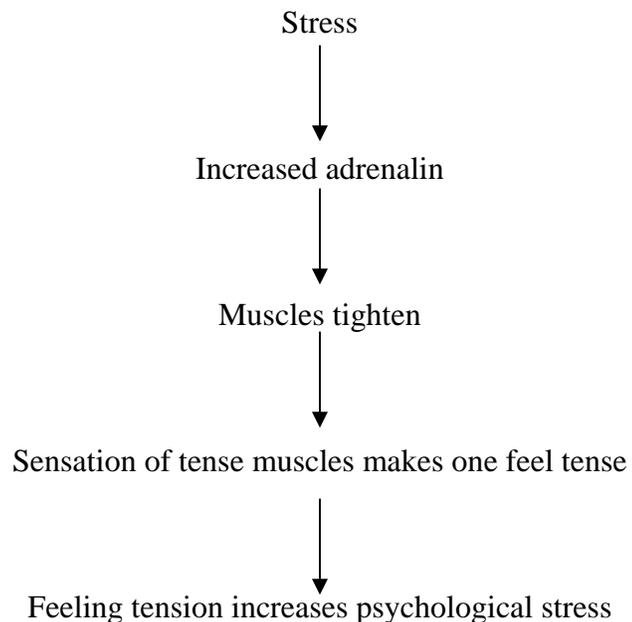
Jacobson explains that to an ordinary observer relaxation *appears* to be occurring when a person simply lies down and is still and "relaxed," but until the person is carefully trained in *how* to truly relax, clinical signs reveal prevailing residual tension. Common signs of residual tension include: irregular respiration; pulse rate often still moderately increased when compared with tests after real Jacobsonian relaxation; slight marks of the forehead; eye movements; frown; tenseness of eye muscles; knee jerk, or other deep reflexes can be elicited. "It is amazing that a faint degree of tension can be responsible for all this" (Ibid., p.30). Jacobson adds, "...it has been my experience that wherever there is psychic disturbance, trained observation will reveal corresponding signs of neuromuscular hyperactivity or hypoactivity" (Ibid., p.25).

Results of Relaxation

In *Progressive Relaxation* Jacobson suggests that the additional relaxation needed to overcome residual tension is very minimal but once it is practiced habitually the following results are commonly observed:

- 1- Respiration loses slight irregularities
- 2- Pulse rate may decline to normal
- 3- Knee jerk diminishes or disappears
- 4- Pharyngeal and esophagus tensions are reduced
- 5- Mental and emotional activity dwindle or disappear

Muscular tension is a physical sensation in the body that produces a negative feedback loop. The process works as follows:



Jacobson argues that because anxiety accompanies tension one can reduce anxiety by learning to relax the tension itself. He noted that *reducing physical tension could reduce psychological tension*. “The emotions subside as the individual completely relaxes the striated muscles, particularly those which he seems to find specifically concerned in the emotion at hand: the esophagus in one instance of fear; the forehead and brow as a rule in worry and anxiety” (Jacobson, 1938, p. 218). Years of study showed Jacobson that present results indicate that an emotional state fails to exist in the presence of total relaxation of the peripheral parts of the body” (Ibid.). Because these two conditions are total opposites they cannot occur simultaneously.

One of the problems stressed people encounter today is actually finding the time to relax. Not only are people too busy to relax on a schedule, it is likely that they are unaware of its benefits. Time is one of modern man’s greatest shortages. This was also a problem back in Jacobson’s day, and to those of this mindset he responded unsympathetically, “Willingness [to engage in relaxation] is the cardinal requirement for the method of relaxation ...even the healthy adult would rather be up and doing than lying down to relax; in this he is like the child who does not wish to go to bed at night. Unwillingness to give up activities is increased during fretfulness and distress” (Ibid., p. 413).

Autogenic Therapy

The only journey is the one within.

Rilke

Autogenic therapy, also referred to as autogenic training (AT), is a carefully developed relaxation procedure; it is a form of autonomic self-regulation (self-hypnosis

approach) with a psychophysiological orientation. The rationale of AT is to enable autonomic self-regulation by eliminating environmental distraction thus introducing imagery that accompanies autonomic self-regulation through a structured set of specific exercises which are easy to learn and practice on one's own (Linden, 1994, p. 228). It has demonstrated over time the capacity to bring forth a healthy balance between the sympathetic (fight or flight) and the parasympathetic (rest, renewal, repair) workings of the autonomic nervous system.

The term "autogenic" comes from the Greek *autos*, meaning *self* and *genous* meaning *produced by* (Retrieved from <http://www.guidetopsychology.com/autogen.htm>). *Autogenic* therapy is a powerful, successful self-healing technique that almost anyone can learn to practice alone and at will. It can successfully be taught and practiced either individually or in groups of 8 or less, but is not recommended by Schultz and Luthe for children under age 16.

Johannes Schultz

Autogenic therapy's origin is rooted in Germany where it continues to be a useful process for healing. Psychiatrist and neurologist Dr. Johannes Schultz (1884-1970) developed autogenic therapy in the early 20th century. Schultz was influenced and supported by Freud, as is suggested in the following account of their first encounter:

Freud looked at me, sizing me up and said: "Surely you do not believe that you could heal," whereupon I replied: "By no means, but I think that, like a gardener, I could remove obstacles hindering a person's true development." "Then we will understand each other", answered Freud, and finished our one-and-a-half hours' long conversation with a charming smile (Retrieved December 1, 2004 from

http://autogenic-therapy.org.uk//index.php?=com_content&task=view&id=5&Itemid=33).

Another aspect of AT's evolution extends back to 1894 –1903 when Oskar Vogt was researching hypnosis and sleep. A renowned psychophysiologically oriented neuropathologist, Vogt noticed that intelligent patients who had practiced a series of heterohypnotic sessions supervised by Vogt himself, were able to access a state similar to a hypnotic state. Vogt observed that these “autohypnotic” exercises induced feelings of warmth and heaviness in the patients and he believed there was significant potential to be discovered within this state. He observed that the “autohypnotic rest” had undeniable recuperative value for his patients, and eventually it became evident that patients who practiced these short-term exercises daily showed reduction in stress effects of fatigue and tension as well as headaches (Luthe & Schultz, 1969, p.5).

In 1905 Schultz began to study the efficacy of hypnosis. Reflecting on what he had told Freud years earlier, he focused on developing a therapeutic process which would reduce and eliminate hypnotherapy's shortcomings such as extreme passivity of the patient and the patient's relinquished control to the therapist (Ibid., p.5). During his research Schultz noted that most of his hypnotized patients reported feeling heaviness in their extremities, a general feeling of relaxation, and a feeling of warmth throughout the entire body. Building on these observations Schultz eventually designed six specific exercises called “standard formulae,” which induced a hypnotic state. This series of six physiologically oriented autogenic exercises became the foundation of autogenic training.

Schultz soon realized that patients who maintained a casual passivity while concentrating on the exercises experienced the best results. In 1924 while continuing his

research and practicing as a psychiatrist, Schultz moved to Berlin where he was in close contact with Vogt, who was engaged in brain research. In 1932 Schultz published the first edition of *Autogenic Training*, which covered in depth the clinical application of what he called the six standard autogenic formulae. Gradually he refined the technique (its approaches, the verbal portion, and training posture) and what is used today is referred to as “autogenic standard exercises” (Luthe & Schultz, 1969, p. 6). After almost a half century of research and development, autogenic therapy finally evolved into “a technique of passive repetition of physiologically oriented statements” (Shealy, 1986, p.15).

Wolfgang Luthe

Wolfgang Luthe became a student of Schultz in the late 1940’s. Interested in psychosomatic medicine and autogenic training, Luthe moved to Canada in the 1950’s where he continued his research and introduced the technique to Montreal. In 1968, one year before Schultz died, the two collaborated and published five additional volumes on autogenic therapy. The six volumes comprise their seminal work on this holistic modality. Since that time these six volumes (Schultz wrote an earlier volume in 1932) have been published in nine languages (Retrieved December 1, 2004 from http://autogenic-therapy.org.uk//index.php?=com_content&task=view&id=5&Itemid=33).

Establishment of AT Worldwide

Dr. Malcolm Carruthers and psychotherapist Vera Diamond studied in Montreal with Dr. Luthe in 1978 and afterwards introduced AT to Great Britain. In 1984 the British Association for Autogenic Training was founded, and in 1999 it became the British

Autogenic Society (Ibid.). Today autogenic therapy is practiced worldwide, especially in Japan and Europe. The Oscar Vogt Institute in Japan and the Schultz Institute in Berlin are considered pre-eminent in the field of autogenic research, development, and training (Ibid.). At the present time it is not however, particularly well known in the United States, except among those trained in biofeedback by Dr. Elmer Green and his associates.

How Autogenic Training Works

*Thinking creates an image.
Images control feelings.
Feelings cause actions.
Actions create results.*

Leland Val Vandewall

From a psychophysiologic perspective Schultz says that this technique “characterizes the therapeutic implications resulting from a self-induced psychophysiologic shift to a specific state (autogenic state) which facilitates autogenic (brain-directed, self-generating, self-regulatory) processes of self-normalizing nature” (Luthe & Schultz, 1969, p.1). The exercises are assembled specifically to enhance brain directed, self-regulatory mechanisms which automatically work to create recuperation, healing, and homeostasis within the organism. Schultz sees the physiological and psychophysiological effects of these exercises as being diametrically opposed to changes elicited by stress (Ibid.).

Autogenic Training- The Process

We are more connected to the invisible than the visible.

Novalis

Essentially AT invokes the parasympathetic response. It works by guiding an individual toward establishing a feeling of warmth and heaviness throughout the body, with the exception of the forehead. This results in creating a profound state of relaxation and inner calm. The exercises are practiced in a dimly lit, quiet space and the patient is encouraged to wear unrestrictive, loose clothing and to be in the most comfortable, relaxed position as possible. According to Schultz, the patient's legs should be relaxed with or without support under the knees, and the feet should not touch, nor should the patient wear shoes. The patient's trunk, shoulders, and head should be symmetric, relaxed, and also as comfortable as possible. The arms, also relaxed, are by the sides, not touching the torso, and fingers are spread slightly, also not touching the torso. Shultz insists that it is important to follow this posture guideline closely in order to maximize results (Luthe & Schultz, 1969, p.7).

The patient who uses a sitting posture for AT should sit in a chair with both feet flat on the floor and the seat's edge must not force pressure on the thighs. The back should be completely straight and arms should rest, relaxed, on the thighs. Eyes are closed, as in the horizontal position, in order to avoid any stimulation to the nerves (Ibid., p.9-12).

Schultz claims that one of the most important factors of the autogenic approach is the patient's passive and casual attitude toward the intended functional changes. This is in contrast to "active concentration" which is usually thought of as an intense mental focusing, possibly accompanied by goal directed will power, with a specific end result in mind. The "passive concentration" used in AT is not result driven. As the patient passively concentrates on the autogenic formulas, self-normalizing activity of certain brain mechanisms is facilitated. There are occasions when brain-directed unloading (autogenic discharges) occurs;

but these are considered a normal and healthy therapeutic process resulting from the passive concentration (Ibid., p.20).

It is strongly recommended that the practitioner for AT reviews with the patient that the body is comprised of automatically functioning systems, mechanisms, and regulatory principles that require nothing on the part of the patient. For example, the heart beats independently, the respiratory system is coordinated by nervous centers, not the patient himself, and likewise for other anatomical functions responsible for sleep, excretion, and defecation which work without the patient's voluntary intervention. Instead of the patient being concerned with any particular system of the body, it is preferable that he simply allows the body to function on its own as it naturally does.

Schultz emphasizes that the verbal configuration and the sequence of the autogenic formulae actually facilitate the body's natural tendency toward multifunctional self-regulation. He states, "It is in this connection that the autogenic standard formulas may be regarded as 'technical keys' which, when applied correctly, unlock or facilitate a psychophysiology complexity of brain-directed (*autogenic*) processes aiming at multidimensional readjustment and gradual normalization" (Luthe & Schulz, 1969, p.14).

In Biogenics Health Maintenance, Shealy states, "Autogenic therapy consisted of 'mental manipulation of psychophysiological function.' The ultimate changes evolving from such practice, they felt, occurred in the diencephalon, that portion of the brain containing the hypothalamus" (Shealy, 1986, p.17). Conscientious practice of autogenic exercises brings patients to a "neutral autogenic state" where there is great quietness and "increased vigilance" (Ibid., p.19).

The Six Autogenic Formulae

After the patient is as comfortable and relaxed as possible in the appropriate position, eyes closed, he or she is ready to start the first of six standard formulae. Following are the standard formulas developed by Luthe and Schultz:

1. First standard exercise: heaviness formula

Example: “My right arm is heavy.”

2. Second standard exercise: warmth formula

Example: “My right arm is warm.”

3. Third standard exercise: cardiac formula

Example: “Heartbeat calm and regular.”

4. Fourth standard exercise: respiratory formula

Example: “Breathing calm and regular.”

5. Fifth standard exercise: abdominal formula

Example: “My solar plexus is warm.”

6. Sixth standard exercise: forehead formula

Example: “My forehead is cool (Luthe, 1970, p. 139).”

Data from physiologically based research indicate that passive concentration on the standard formulae affects a number of physiologic changes other than those related to the functional theme of the given formula. For example, although warmth or heaviness might be the focus of a particular exercise, research shows that the entire body as a whole is affected. Luthe found that each particular exercise causes a specific effect on various physiologic systems (e.g. circulation, respiration, neuromuscular, activity) (Luthe, 1970, p.1).

Schultz and Luthe report that 80% of psychosomatic illnesses (stress) were helped by AT. After ten years of research they said that in many respects their knowledge of AT advanced considerably; but they admit that the neurophysiologic mechanisms responsible for the physical and mental changes which occur during and immediately after the exercises or resulting from longer periods of training remain a curiosity. Schultz maintains that progressive normalization through brain directed neutralization of accumulated disturbing material enables AT to be more effective than other therapist-designed or therapist directed forms of treatment which he believes are more limited (Luthe, 1970, p.131). Although Schultz and Luthe emphasize a very slow introduction to each of the following exercises, Shealy reports that for 32 years he has used a complete introduction within 20 minutes with consistently good results (N. Shealy, personal communication, n.d.). The text of the Shealy Basic Schultz audiotape is provided in Appendix G.

Autogenic Training-- Review of Research

Research in the United States comparing AT and Jacobson's progressive relaxation is limited, although according to Shapiro and Lehrer at Rutgers University, both techniques are widely used to help people reach a state of relaxation. One Rutgers study found that when compared to a control group, patients trained in either of the two relaxation techniques experienced reduction in levels of anxiety and depression, as well as reduction in number and intensity of symptoms. Researchers observed that autogenic training seemed to produce specific effects on self-perception of warmth and heaviness in the extremities and depth of breathing (Shapiro, 1980, p.249). Results of the Rutgers study indicate that following AT, subjects reported feeling many of the specific sensations (relating to warmth, heaviness, and

respiration) that AT trained them to feel. Based on subjective reports, this study delivered evidence for specific effects produced by AT (Ibid., p. 254).

The purpose of a study conducted by Stetter and Kupper was to enlarge the database regarding the effectiveness of AT and to include recently published studies. They studied 73 controlled trials related to the effects of AT (Stetter & Kupper, 2002, p.46). In the field of psychosomatic disorders AT's effectiveness was demonstrated in more than one study for the following: mild-to –moderate hypertension, tension headache, migraine, coronary heart disease, asthma bronchiale, Raynaud's disease, and an unspecified type of somatoform pain disorder (Ibid., p.93). Stetter and Kupper identified results of AT that appear promising for inflammatory bowel disease, atopic eczema, glaucoma, and preparation for childbirth; however, they recommend further research regarding these disorders. In most of the studies interpreted by Stetter and Kupper AT was used in addition to various medical treatments, which led to the determination that AT could be one aspect of “psycho-somatic” therapy (Ibid., p. 94).

Because stress management is rapidly becoming a specialization in the field of mental health and professional application of stress management programs is on the rise, there is increasing importance for documenting the efficacy of a variety of stress reduction techniques now available to stressed people. The hypothesis that various stress management techniques show specific effects was investigated in 1994 (Lehrer, Carr, Sargunaraj &, Woolfolk, 1994, p. 353). These researchers reviewed studies that compared various techniques and examined literature that evaluated the effects of individual techniques. Based on the evidence, it was determined that methods with a cognitive orientation show specific

cognitive effects, methods with an autonomic orientation show specific autonomic effects, and methods with a muscular orientation show specific muscular effects (Ibid.).

According to Lehrer, Carr et al., the most prominent techniques used among stress management professionals are progressive relaxation, biofeedback, AT, cognitive therapy, and several other meditation oriented modalities. This group suggests there is evidence that AT especially affects self-reports of sensations which are specifically suggested during AT (for example: warmth and heaviness in the limbs). These effects are reported to be greater than those produced by progressive relaxation (Ibid., p. 355). AT is considered by these researchers a stress management technique.

A study conducted in 1983 by Borgeat, Stravynski, & Chaloult shows that AT produces greater increases in the vividness of imagery and emotions. These results are congruent with AT's focus on imagining visceral sensations and emotional states, for example, "My mind is quiet and still." (In comparison to AT progressive relaxation focuses on training the patient to identify muscular sensations) (Ibid., p. 355). After exhaustive research efforts Lehrer, Carr et al. recommend that until further research is available, particularly research *without* biases and errors, mental health therapists would do well to develop competency in several different techniques for stress reduction (Ibid., p. 387).

Although AT is often described as a standard relaxation/stress management therapy in Clinical and Health Psychology texts, Linden believes that actual reviews on its outcome are scant. He claims that even though Schultz and Luthe devoted two of their six volumes on AT outcome, their positive results are often based on case studies with questionable controls. Linden surmises that due to the scarcity of hard data on AT, its popularity in the United States has suffered (1994, p 229). Linden's opinion is that many studies listed under AT in

the medical and psychological systems used modified versions of AT, leading to more difficulty in obtaining accurate hard data. Therefore his study's focus is specifically on *controlled* outcome research on autogenic training. His findings are supportive to the claimed potential of AT as a treatment for a wide variety of psychological/psychosomatic dysfunctions. Following his detailed review Linden reports, "AT has potential for childbirth, infertility, angina, eczema, headache, and rehabilitation from myocardial infarction, even though the small number of available studies calls for much caution" (Ibid., p. 258). Further research in order to collect more definitive data on AT outcome is recommended (Ibid., p. 261).

In 2003 Goldbeck and Schmid's study used AT on children and adolescents. Although Schultz and Luthe do *not* recommend AT for children under the age of 16, the effects of this research show reduced symptoms of anxiety and emotional problems (2003). Whitney's study using patients with fibromyalgia also demonstrates that AT helps alleviate symptoms of anxiety and depression simultaneous to improving physical symptoms (2000, p. 65). In addition, Whitney postulates that AT has been proven effective in reducing mild to moderate dysphoric symptoms for approximately 30% to 50% persons reported to suffer with major depression (Ibid., p.9).

The Relaxation Response

Only within yourself exists that other reality for which you long. I can give you nothing that has not already its being within yourself. I can throw open to you no picture gallery but your own soul.

Herman Hesse

Herbert Benson

Thirty years ago, working in the same room at Harvard Medical School where Walter Cannon had worked 60 years earlier, founding president of the Mind Body Institute, Herbert Benson, embarked upon landmark research studying the destructive effects of stress and our own potential for self- healing. During the last three decades Benson and numerous colleagues have explored the stress response, its antidotes, and the relaxation response (RR), as well as other techniques for relieving stress as an effort to maintain good health.

In his first book, *The Relaxation Response*, Benson proposes that our culture is too dependent on external panaceas for ill health. Far too quickly our society turns to medications, procedures and surgeries when we should be using our inborn tendency for self-healing (Benson, 2001, p.xi). Benson laments that “Therapies we can purchase and caregivers we consult...are still far more impressive to us than our own hearts, and minds, lungs and hopes, muscles and beliefs, even though they sustain us day in and day out” (Ibid.).

The connection between stress and hypertension had intrigued Benson, a cardiologist, for years. Cannon had theorized that mammals’ physiologic reaction to stress (the stress response) was a survival instinct that had evolved into a survival mechanism. When we encounter stressful situations our bodies involuntarily release the hormones adrenaline and noradrenalin. This secretion increases heart rate, respiration, blood pressure, metabolism, and blood flow to the muscles; this is extraordinary preparation for the body to fight or take flight for survival. Benson’s research shows that there is an opposite response as well, which he calls the Relaxation Response (RR). This is “an inducible, physiologic state of quietude” (Ibid., p.xvii). Benson maintains that in our modern culture the RR is undoubtedly more significant than ever for our survival because tension and anxiety often bring about and

sustain the fight or flight response in us. He argues that the RR prevents and compensates for the damage resulting from frequent nervous reactions that move through our hearts and bodies (Ibid., p.xvii).

Relaxation Response – The Research

Meditation is the key to the morning and the latch of the evening.

Mohandas Gandhi

Extensive research, particularly with transcendental meditators and Tibetan monks, has convinced this medical pioneer that within us is a built in counterbalancing mechanism (the RR) to the stress response. The RR is “an inborn set of physiological changes that offset those of the fight or flight response” (Benson & Stuart, 1992, p.35). These changes are orchestrated and function together in an integrated manner. We know that the long-term effects of the stress response can create permanent damaging changes to the body, which is why relaxation is critically important for health maintenance.

Realistically, changing most of the stressful aspects of modern life is out of the question for us, but we *can* change the way we respond to stress. Benson investigated how we might go about this change by studying Zen monks. This research showed that it is possible for a person to develop a predominance of alpha waves in the brain. Alpha waves are usually associated with feelings of well-being and inner calm. He found that during meditation alpha waves increase in amplitude and regularity. Simultaneously, another group of researchers in New Delhi, India were reporting the same increase in alpha wave activity during experimentation with meditation done by yogis. Studies show that over a period of

time during the activity of meditation, there is a decreased consumption of oxygen and a decrease in metabolism measured in the meditator (Ibid., p.65).

Benson's group also investigated anxiety and how it relates to relaxation. They found that during meditation, or *relaxation*, not only is there a drop in oxygen consumption and metabolism and increased alpha wave production, but there is also a decrease in blood lactate levels. (Blood lactate is produced by the metabolism of skeletal muscles) (Ibid., p.69).

In 1967 researchers at Washington University School of Medicine investigated patients suffering from neurosis and frequent anxiety attacks. In the double blind study either a non-active salt solution or lactate was injected into the subjects. There were two groups of subjects: those suffering with anxiety neurosis and those who were not suffering (considered "normal"). Practically every subject with anxiety neurosis who was given lactate experienced a panic attack. In this same group the percentage of anxiety attacks *decreased* significantly among those given the salt solution. Among the "normal" subjects, 20% experienced an anxiety attack when given lactate while those given salt solution experienced practically no anxiety attack (Reiman, Raichle, Butler, Herscovitch & Robins, 1984, p.683).

Benson draws attention to the possibility that if increasing lactate is associated with producing anxiety attacks, then the low levels of lactate among meditators is consistent with observation of less anxious feelings and their more relaxed state of being. Although he claims uncertainty as to why this occurs the observation remains that during the first 10 minutes of meditation blood lactate levels drop; this drop is consistent with decreased SNS activity (Benson, 2001, p.71).

Out of Benson's research with meditators emerged the concept that varied physiologic changes associated with meditation were included in a response *opposite* to the

fight or flight response. Decreased oxygen consumption, decreased carbon dioxide production and respiratory rate, and decreased heart rate and blood lactate all indicate *decreased* activity of the SNS. These changes are representative of a “*hypometabolic* or restful state” (Beary, Benson, & Klemchuk, 1974, p.115). The opposite is also true. That is, the physiologic changes characteristic of the fight or flight response *increase* SNS activity and are representative of a *hypermetabolic* state. Benson concludes, “Because the fight or flight response and the RR are in opposition, one counteracts the effects of the other... This is why we feel the RR is of such import, for with its regular use it will offset the harmful effects of the inappropriate elicitation of the fight or flight response” (Benson, 2001, p.72).

In *Beyond the Relaxation Response*, Benson claims that through the mind-body connection anxiety “turns on” the SNS. Once the SNS is activated stress, worry, and physical symptoms are heightened. This exacerbates the whole process, ultimately increasing anxiety. Research has shown that the RR does not decrease the amount of norepinephrine released by the nerves but it does change the body’s response to it so that the hormone’s effect is lowered. The RR stops the vicious cycle of the stress reaction by blocking the action of the SNS’s hormones. This in turn prevents or lowers the “Anxiety Cycle” and other harmful effects (Benson & Proctor, 1984, p.98). Benson sees the RR as the catalyst for replacing the “Anxiety Cycle” with what he calls the “Faith Factor.”

Relaxation Response and Physiologic Changes

The physiologic changes associated with the RR are related to what is known as an altered state of consciousness, routinely practiced in eastern and western cultures throughout time. This deliberately evoked state of consciousness is sometimes described as clairvoyant,

extraordinary, nonordinary, ecstatic, otherworldly, and totally relaxing. It encompasses a “universal element of rising above mundane senses, a feeling beyond that of common-day existence” (Benson, 2001, p.82). In actuality RR has been practiced throughout the ages for thousands of years, so it is really nothing new. What is new about it is our growing awareness that it is easily accessible to each of us and its healing potential is mentally, spiritually, and physically significant.

How to Elicit the Relaxation Response

Our breath is the bridge from our body to our mind...Breath is aligned to both body and mind, and it alone is the tool which can bring them both together, illuminating both and bringing both peace and calm

Tich Nhat Hanh (The Miracle of Mindfulness)

While the RR can be evoked using a variety of techniques handed down through the generations, Benson’s teaching focuses on the practice of meditation as one way to achieve it. This particular technique makes use of components of Zen and Yoga meditation, western prayer methods, and secular relaxation practices. In *The Wellness Book*, Benson provides the following guidelines for eliciting the RR.

The two essential components for eliciting the RR are:

1- *A Mental Focusing Device*. There should be a continual stimulus (sound, word or phrase) repeated silently or audibly. Fixed gazing at an object is acceptable. The purpose of this is to help shift the mind from everyday thoughts and worries.

2- *A Passive Attitude*. If distracting thoughts occur during the repetition they should be disregarded and attention be redirected to the technique. One is encouraged against entertaining thoughts about how well the exercise is going.

The basic steps necessary to elicit the RR are:

Step 1: Pick a focus word, phrase, prayer or image. You may choose to focus on breathing.

Step 2: Sit quietly in a comfortable position.

Step 3: Close your eyes.

Step 4: Relax your muscles.

Step 5: Breathe slowly and naturally, and as you do, repeat your focus word or phrase as you exhale.

Step 6: Assume a passive attitude. Do not worry about how well you are doing.

Step 7: Continue for ten to twenty minutes.

Step 8: Practice the technique once or twice daily (Benson, 1992, p.45).

Participants are encouraged to engage in diaphragmatic breathing rather than shallow chest breathing. Deeper breathing offers control over some of the anxieties and tensions that contribute to stress-related physical symptoms. Diaphragmatic breathing also brings to balance both mind and body.

After becoming comfortable practicing the RR Benson suggests observing your troubling thoughts to determine which are real and which are imagined consequences. Developing an attitude of acceptance toward whatever happens during the RR process is valuable. Setting a regular time to practice the RR, preferably in the morning, is strongly advised; RR works best when it becomes a meaningful part of one's day.

Patients are urged to find a quiet place in which to practice RR, to meditate sitting up instead of lying down, and "to remember that it is a central part of your treatment plan—your prescription, if you will—and that its benefits will be linked to how faithfully you

incorporate the relaxation response into your daily schedule”(Ibid.). Although much of Benson’s focus has been on meditation and relaxation he says that the RR can be evoked by a number of techniques including: certain types of prayer, autogenic training, progressive muscular relaxation, jogging, swimming, breathing exercises, yoga, Tai chi chuan, Chi gong, and even knitting and crocheting.

Photostimulation

For the rest of my life I will reflect on what light is!

Albert Einstein, c.1917

Historical Background

Photostimulation is light therapy; it includes frequency and intensity of light as well as color therapy. Light has been used for healing since recorded time. History tells us that ancients looked to the sun as they worshipped, knowing intuitively that it provided them with healing. Hutchinson described the ancient origins of the use of flickering light, stating

Humans have probably attempted to control these flickers since the discovery of fire. Ancient shamans and poets used the powers and images of flickering flames to enhance their magic. Ancient scientists explored the practical applications of flickering light. In A.D. 125 Apuleius experimented with the flickering light produced by the rotation of a potter’s wheel and found it could be used to diagnose a type of epilepsy. Around A.D. 250 Ptolemy noted that when he placed a spinning spoked wheel between an observer and the sun, the flickering of the sunlight through the spokes of the wheel could cause patterns and colors to appear before the observer’s eyes and could produce feelings of euphoria. At the turn of the [twentieth] century,

French psychologist Pierre Janet noticed that when patients at the Salpêtrière Hospital in Paris were exposed to flickering lights, they experienced reductions in hysteria and increases in relaxation (Hutchinson, 1994, as cited in Sanders, 2000, p.33-34).

The famous Greek physician Herodotus was regarded as the Father of heliotherapy, which is the practice of using full spectrum of light for mental and physical healing (Lieberman, 1991, p.67). Among early advocates of heliotherapy were the Greek physician Claudius Galen, physician and writer Aurelius Celsus, and Arabian philosopher and physician Avicenna (Ibid.).

Early pioneers of light were focusing on establishing the (medical) validity for light as a healing agent while others were looking at alternative aspects of light, speculating on its physical attributes and scientific properties. Aristotle, for example, thought that light traveled in waves, but Euclid disagreed, proposing that it traveled in straight lines. In the second century Ptolemy, an astronomer from Alexandria, observed that light bends, leading to the discovery of refraction. While early doctors, astronomers and physicists researched light, there were others who studied it from a more philosophical perspective. Hippocrates, Plato, Shakespeare, and Descartes recognized the significance of light but also characterized the eyes as the bridge between the light of God and the spirit of humanity (Ibid., p. 68).

In the 18th and 19th centuries sunlight was used to treat tuberculosis, rickets, scurvy, rheumatism, paralysis, and edema and muscle weakness. At the turn of the 19th century the Danish physician Neils Finsen reported the successful treatment of smallpox using red light. Following that success he continued researching phototherapy by using ultraviolet light to

treat cutaneous tuberculosis, winning the Nobel Prize for his use of carbon arc phototherapy. Finsen is known today as the Father of photobiology (Ibid., p.71).

Edwin Babbit

Bringing to a close the 19th century's efforts toward pioneering of light was Dr. Edwin Babbit, publishing his classic *The Principles of Light and Color*, considered at that time the most credible and outstanding effort on light and color. Babbit distinguished the concept of color and light therapy by developing several devices that combined colored filters with both natural and artificial light. He suggested focusing the light directly on the specific area of the body which needed healing. Babbit also made solar elixirs (which are still used today) by irradiating water with sunlight and filtering it through a special Chromo Lens, claiming that this potentized water retained the energy of the vital elements within the particular filter used, giving it remarkable healing powers. Many knew Babbit as a miracle man since he treated numerous stubborn illnesses with remarkable success (Ibid., p. 74).

Sidney Schneider- Entrainment and EEG

Modern research using flashing light began in the 1930's with the discovery of entrainment and the EEG. It was noted that brainwave activity has a tendency to follow the same frequency as a flashing light stimulus held in front of a person's eyes. During World War II Sidney Schneider observed that radar operators frequently fell into altered states of consciousness while watching the flashing lights on their equipment. This led to the development of the Schneider Brainwave Synchronizer, the first flashing light device intended to induce altered states of consciousness. Researchers were further motivated to

study the entrainment process using the electroencephalograph (EEG), observing that photostimulation produced changes in brainwave activity throughout the brain (Sanders, 2000, p.55).

By the 1960's studies monitoring the effects of photostimulation on the brain had produced dramatic advances in this technology, especially when it was used in conjunction with EEG. Joe Kamiya showed that it was possible to control brainwave activity consciously through the use of EEG feedback (Cranton, 1999, as cited in Sanders, 2000, p.35). The technology of photostimulation appears to involve an entrainment process that has been used to assist with EEG biofeedback; this is often referred to as neurotherapy, neurofeedback, or EEG-driven photostimulation. These photostimulation therapies have been used as treatment for depression and to assist people in reaching deep relaxation (Cranton, 1999; Kumano et al., 1996 as cited in Sanders, 2000, p.35).

Dinshah P. Ghadiali and Harry R. Spitler

Two major pioneers were instrumental in developing the foundation for the present day science of phototherapy. These two masterminds, Dinshah P. Ghadiali and Harry Riley Spitler, introduced the sciences of Spectro-Chrome and Syntonics. Ghadiali, trained in physics, chemistry, mathematics, and electricity, concentrated on developing an exact scientific approach to treating the body with color. Spitler, trained in medicine, looked at the human body's physiology as it responded to light. He developed comprehensive and unique clinical applications that were specific for different body types. Ghadioli's Spectro-Chrome approach applied color directly to the body, while Spitler's syntonics system treated the body via the eyes, therefore using the shortest and most direct path to the brain centers. There are

numerous verified success reports regarding the Spectro-Chrome, and although Ghadiali was not a physician, he eventually was awarded at least four honorary medical degrees (Gerber, 1996).

In the 1940's Spitler, who had four earned doctorate degrees, researched colored light using animals, eliciting startling results. Research convinced him that the portions of the brain which directly control both the autonomic nervous system and the endocrine system are also connected to the eyes by the shortest, most direct, and most highly organized nerve pathways in the brain. He concluded that heredity, environment, and nutrition play significant roles in health, but light may possibly be "*the most significant role* in altering function, behavior, and physiological response; in other words, merely altering the color of light entering the eyes can disturb or restore balance within the autonomic nervous system and thus effect resultant functions!" (Lieberman, 1991, p.77).

The word *syntonic* is a derivation of a Greek word meaning, "to bring to balance" and the focus of Spitler's "syntonic principle" is bringing the body into balance. The basis of syntonic therapy is born of his observation that specific frequencies of light, when directed through the eyes, potentially could affect a rebalancing process in the nervous and endocrine systems. In 1951, the Russian scientist S. V. Krakov validated Spitler's speculations regarding the effects of various colors upon the sympathetic and parasympathetic nervous systems. He was one of the first physicians to suggest that health problems would manifest when the autonomic nervous system is ruled too much by either the sympathetic (fight or flight) or the parasympathetic (relaxation-response) system (Gerber, 1996, p.234).

Spitler also discovered that there is a relationship between the frequency of light and growth rate of cells and tissues exposed to those frequencies and colors. He is also credited

for finding that different light frequencies seem to stimulate the release of specific neurochemicals and hormones secreted from the endocrine glands and the pituitary (Ibid., p. 234-35).

John Downing

Building on Spittler's work was optometrist John Downing, a primary innovative researcher of light who contributed to the science of phototherapy by conducting neuroscience research and clinical practice in Ocular Light Therapy. This is a therapeutic projection of different colors and wavelengths of light through the eyes in attempt to improve various types of brain dysfunction and to stimulate brain function (Ibid., p.234). Downing developed the patented Lumatron Ocular Light Stimulator, a modern daylight therapy device. Physician Elson M. Haas, who specializes in integrative medicine and uses the Lumatron, says,

Approximately a hundred people in my office completed twenty or more sessions of Ocular Light Therapy. The patients who received the most benefit were those diagnosed with chronic fatigue syndrome, irregular menstrual problems, thyroid difficulties, insomnia and depression. The majority of these patients noticed similar positive effects. As a medical doctor, I believe phototherapy affects the human energetic system at the level of core energy, similar to acupuncture, and osteopathic or chiropractic treatment...Reflecting back on all the patients who received colored light phototherapy in my practice, the best results happened when light therapy and psychotherapy were combined. [This is] the ideal combination of "high-tech" and "high-touch" in a phototherapeutic practice (Hartley et al., 1996, page xxxv).

John Ott

John Ott, another innovative pioneer of light and light therapy (1950's and 1960's), contends, "There is no question in my mind that the visible portion of the spectrum as well as certain portions beyond, especially the ultraviolet, act as the ignition system for all human biological functions "(Lieberman, 1991, p. xvi). Today modern science has replaced heliotherapy with an expansive range of various pharmaceuticals whose goal is to suppress symptoms so the aggravation of imbalance within the body is no longer noticed. Although medical science cannot fully replicate the sun and the specific wavelengths of light that are borne out of this great star, there are inventions that are able to deliver specific wavelengths. For Ott, light is an essential nutrient, not so different than food. He believed that just as the wrong kind of food can affect us negatively while the right kind fosters good health, light works similarly. When humans receive light of specific intensities and color ranges the internal biological clock is regulated healthily. Otherwise, our daily, monthly, and annual rhythms can become disturbed (Ibid., p.6).

Elson Haas states in *Light Years Ahead*, "As a medical doctor, I believe phototherapy affects the human energetic system at the level of core energy, similar to acupuncture and osteopathic or chiropractic treatment" (Hartley et al., 1996, p.xxxv). Indeed, the research shows that phototherapy is a great contender for healing now and in the future.

Norman Shealy - The RelaxMate™

The last of the human freedoms is to choose one's attitudes.

Victor Frankl

In 1975 inventor and medical pioneer Norman Shealy began using photostimulation with chronic pain patients to help them achieve relaxation, which he believed would help them detach from their pain preoccupation. Particularly interested in synchronization of *both* hemispheres of the brain, Shealy developed the first photostimulation *goggles* to be worn by the patient. (Previously brain wave synthesizer (BWS) devices that the patient looked at from several feet away were used to implement photostimulation therapy). These early photostimulation goggles flashed simultaneously in the left and right eyes at the alpha (10Hz) or theta (5.5Hz) frequency with opaque white light. After 30 minutes of relaxation using the goggles, all 92 subjects in an early study reported increased relaxation, with all but four subjects reporting depths of relaxation at 60% or greater. Most were above 75%. Shealy also found that pulse effects and blood pressure are compatible with those of the relaxation response and that the degree of pain relief is increased over that reported with only the relaxation response (Shealy, 1990).

During a period of twenty years Shealy found in trials involving over 9,000 clients that by using the brain wave synchronizer (BWS) and guided mental relaxation (self- hypnosis) (SH) exercises at least 90% of subjects achieve deepened levels of relaxation. These results “are compatible with those of Benson and others who indicated that the relaxation response is a major stress reducer and assists the process of homeostasis” (Cox, Shealy, Cady, Liss, 1996, p.33). The increase of beta endorphins after using the BWS/SH suggests an overall sense of well-being and decreased pain. BWS with self-hypnosis appears to be effective for stress and pain management (Ibid.). At the present date more than 25,000 people own and have used the RM. Shealy has used various forms of it with over 25,000 patients and has

carried out several hundred related research studies (N. Shealy, personal communication, January 21, 2006).

Shealy confirmed Schneider's findings "that individuals enter a deeper state of focused attention more rapidly if they fine tune their own most entraining frequency" (Cox et al., 1996, p.34). In most cases patients choose a slow theta frequency while several very anxious individuals use the high alpha frequencies. Within five minutes relaxation levels of 80% to 100% are reached and there appears to be a greater reduction of pain when subjects self select the flickering rate rather than use a standard 10 Hz rate (Ibid., p. 34).

The colors blue red, green, amber, white, and lavender or violets have been offered to subjects. Most find violet the most relaxing. However, many trials have shown that personal preference is all that matters where color is concerned (N. Shealy, personal communication, October 30, 2005).

Individuals are often left feeling groggy instead of alert after having used the RM for over 40 minutes. For this reason the Shealy Institute for Comprehensive Health Care usually recommends 15-20 minute sessions. In addition, Shealy speculates that varying BWS rates could have different affects on neurochemicals. Most subjects choose the lowest theta rates, which *might* increase beta-endorphins more without increasing norepinephrine and/or serotonin. Further research is necessary in order to assure certainty about this (Cox et al., 1996, p.34).

Sleep is enhanced by RM use, particularly when theta is self-selected, as is the return to sleep when one awakens during the night and uses the RM as a means to fall back asleep. This occurs without the addition of self-hypnosis. On the other hand pain reduction and relaxation are increased when subjects use self-hypnosis tapes with the RM. It appears that

self-hypnosis tapes are a valuable adjunct to the RM for managing pain, stress, and depression (Ibid.).

Schmadel studied the effect of the Shealy RM on anxiety, depression, and chronic pain (Schmadel, n.d). Subjects used the RM twice a day for a minimum of twenty minutes per session over a six-week period. Of the patients evidencing anxiety all reported a substantial reduction of their anxiety, whether in alpha or theta. Over half the subjects had marked or profound results. In the depression group 90% reported lowered mood swing and intensity of the depression (Ibid.).

How the RelaxMate Works- an Hypothesis

All the fifty years of conscious brooding have brought me no closer to the answer to the question, "What are light quanta?" Of course today every rascal thinks he knows the answer, but he is deluding himself.

Albert Einstein, 1951

It is hypothesized that as the flickering light enters the eyes, the brain apparently responds with a pattern of behavior which appears to bring one from whatever state he/she is in prior to the stimulation to a state of quietude and calm. The Shealy Institute states

Hemispheric 'entrainment' techniques are at this point in their infancy and those researchers, like Dr. Shealy are opting to go cautiously, without making outrageous claims and indications. In this manner it is anticipated that progress can be made a step at a time, building from a solid substantial base of data and responsibility to the patients all of us serve. Therefore, Dr. Shealy has now limited the Shealy RelaxMate frequency range from 1 Hz to 7.5 Hz, to be free of any possibility of initiating any seizure activity. Hence, there is ultimate safety (1995, p.1).

A second model of the RelaxMate, the RelaxMate II, has an output of only 1 to 7 Hz and has been just as effective. With the newer model clients can choose blue, red, or mixtures or red and blue, whatever is “pleasant” to the user. With the original device only red color was given, reflected off a blue background (N. Shealy, personal communication, February 4, 2006). At the present time we do not know *how* this works; however, we do know *that* the RM *successfully* assists its users to achieve a deep state of relaxation. Shealy has studied the world’s literature widely and there has never been reported a photo induced seizure below 15 Hz. One person in 10,000 may have an epileptic seizure with frequencies at or about 16 Hz (N. Shealy, personal communication, November 10, 2006).

The Role of the Hypothalamus

*As far as we are able to understand, the only aim of human existence
is to kindle a light in the darkness of mere being.*

Carl Gustav Jung

Situated below the cerebral cortex and atop the brain stem is the hypothalamus or the “brain within the brain,” the ultimate regulator/coordinator of all of our life-sustaining functions. It initiates and directs our responses to stress. The hypothalamus is the receiver of all external information picked up by our sense organs and of all internal and psychic information, as well as the governor of all physiological functions (N. Shealy, personal communication, January 5, 2006).

This network of nerves wired to the rest of the brain is the master control switch of the Autonomic Nervous System (ANS); it controls the two branches of the ANS, the sympathetic branch (SNC) and the parasympathetic branch. It is also a gland that is part of the limbic system (thought of by some as ‘the seat of the emotions’) (Kabat-Zinn, 1990,

p.252). As one of the major control centers of our biological regulatory mechanisms, the limbic system regulates internal body states as well as our emotions and drives. The limbic system triggers the SNS by stimulating specific areas in the hypothalamus. Massive discharges of nervous signals communicate throughout the body at a cellular level. Hormones are released as part of the stress response. For example, the adrenal glands send surges of epinephrine and norepinephrine pouring into the bloodstream when they receive signals from the hypothalamus by way of the SNC pathways. These hormones give one the “adrenalin rush,” associated with the fight or flight response. Following the stressful event, the parasympathetic branch of the ANS plays its part to calm us back down, striving toward homeostasis.

When using the RelaxMate the flickering light passes through the eyes to the hypothalamus where one is left to wonder what happens next within the body. Despite the fact that we do not understand *how* this happens, the result is extraordinary. Relaxation is the result. BWS or/and RM assist hypothalamic homeostasis with less effort than any other known approach (N. Shealy, personal communication, January 27, 2006). With homeostasis, our chances for optimum health - physically, mentally, emotionally and spiritually - are significantly enhanced.

Relaxation versus Pharmaceutical Drugs

One of the first duties of the physician is to educate the masses not to take medicine.

Sir William Osler

The holistic model of health recommends a conscientious practice of relaxation training as part of a holistic, alternative, non-pharmacologic program for overcoming stress,

anxiety, and depression and for enhancing quality of life. The practice of relaxation is self-empowering and encourages self-regulation. Those who use alternative or holistic approaches such as relaxation for lowering levels of stress, anxiety, and depression often do so in response to a growing lack of trust in pharmaceuticals and the pharmaceutical industry. This section attempts to present facts about drug industry activity and compare the two approaches - relaxation and pharmaceutical - as two optional methods for reducing levels of stress, anxiety, and depression.

Can Advertising and The Pharmaceutical Industry Be Trusted?

A lie can travel half-way around the world while the truth is putting on its shoes.

Mark Twain

The litany of drug-related illness, disability, and death is unquestionably the greatest problem of the medical system. Since it is likely that there are more deaths from drugs than lives saved by drugs, it is critically important that informed individuals know the risks and take steps to prevent them (Shealy, 2005, p.25).

People have not always felt a need to protect themselves from the drug industry. For several decades the public trust has been invested in the mystique and power of medicine and its medicine men (the giant pharmaceutical industry), such that members of society are now less cautious about how potent medications actually are and how toxic and dangerous they can be. Without thinking about it the public has turned its trust and health over to a kind of medicine magic that is associated with the power of the prescription pad. The pharmaceutical companies have been esteemed for so long, since they began producing products that eased

our headaches and indigestion and began manufacturing medicines to fight diseases and vaccines that prevent them. Essentially, society became conditioned to perceiving the pharmaceutical industry as its agent for good health, granting them respect -- almost total allegiance. It is important to examine what is really going on (Seitler, 2006, p. 229).

According to industry estimates pharmaceutical companies spent \$15.7 billion on promotion in 2000, increased from \$13.9 billion in 1999 (Retrieved on February 3, 2007, from http://www.mercola.com/2002/may/18/pharmaceutical_facts.htm). From 1996 to 2000 drug advertising more than tripled in dollar volume, from \$791 million to \$2.5 billion. Most advertising dollars are spent on television advertisements. The British Medical Journal reports that the rise in drug expenditures in the United States is also due to shifting demographics (Wolfe, 2002, p.526). Senior citizens comprise a fast growing segment of the population. They tend to become chronically ill, often requiring more drugs, yet many are on fixed incomes, making it difficult to pay the high costs of many drugs. Public Citizen's Health Research Group states that the problems are rooted in (1) the FDA's inability to monitor advertising (2) Lack of regulations for advertising and (3) the FDA's limited enforcement power (Retrieved October 31, 2006 from http://citizen.org/publications/print_release.cfm?ID=7077).

Currently New Zealand and the United States are the only developed nations that allow direct-to-consumer advertising (DTCA) of prescription drugs, a practice that originated in the last decade. Brownfield and Bernhardt's study (as cited in Frosch, Krueger, Hornik, Cronholm & Barg, 2007) showed that in America the average television viewer sees as many as 16 hours per year of pharmaceutical advertisements. This far exceeds the length of time spent with a physician. The practice of DTCA has been debated since 1997 when the

FDA relaxed regulations. Frosch et al.'s research is the first examination of how television ads attempt to influence consumers. Their conclusions from the content analysis of television DTCA state

Despite claims that ads serve an educational purpose, they provide limited information about the causes of a disease or who may be at risk; they show characters that have lost control over their social, emotional, or physical lives without the medication; and they minimize the value of health promotion through lifestyle changes. The ads have limited educational value and may oversell the benefits of drugs in ways that might conflict with promoting population health (Frosch et al., 2007).

Most DTCA attempts to persuade viewers to use pharmaceuticals based on reasons other than rational consideration of costs and health benefits (Ibid.). In addition, much of drug advertising appeals to viewers' emotions; many of the industry's advertisements are false and/or misleading, which can result in injuries and deaths (Wolfe, 2002, p.524). Unlike printed advertising television ads create stories that may provide more information, appealing to a broader range of consumer emotion. This is achieved by incorporating visual imagery, music, and carefully crafted spoken language. Frosch et al. found that while 95% of ads appealed to viewers' emotions none mentioned lifestyle change as an alternative to product use. In 85% of ads medication was presented as the way to gain control over an undesirable aspect of life and 78% of ads presented medications as effective for engendering social approval. In 58% of ads pharmaceuticals were portrayed as a medical breakthrough (Frosch et al., 2007).

Forty six per cent of Americans take at least one prescription drug daily (Leduc, 2002). Two thirds of doctor visits in 2001 resulted in a prescribed drug (Drazen, 2002). In the United States in a given year at least 20% of people are taking prescribed antidepressant medications. Shealy estimates that this represents only half of the truly depressed population and he suggests that they should be treated using safe, alternative, non-pharmacologic treatments (2005, p.99). Since 1995, Research & Design staffs of American brand name drug companies have decreased by 2%, whereas marketing staffs have increased by 59% (Retrieved on February 3, 2007, from http://www.mercola.com/2002/may/18/pharmaceutical_facts.htm). Reports such as these indicate the necessity for asking the following important questions about pharmaceutical drugs.

Are Pharmaceutical Drugs Really Safe?

I will prescribe regimens for the good of my patients according to my ability and my judgment and never do harm to anyone.

To please no one will I prescribe a deadly drug nor give advice which may cause his death.

Hippocratic Oath

The link between suicide and violent behavior and the use of selective serotonin reuptake inhibitors (SSRI) is now established, creating doubts regarding the actual safety of the drugs (Glenmullen, 2000). There are ominous side effects associated with Prozac, Zoloft, Paxil, and other antidepressants; these include neurological disorders, sexual dysfunction in up to 60% of users, dizziness, nausea, anxiety, suicide and violence (Ibid.). The FDA has

warned that the following specific behaviors are “known to be associated with these drugs: anxiety, agitation, panic attacks, insomnia, irritability, hostility, impulsivity, akathisia (severe restlessness), hypomania, and mania” (Breggin, 2004, p.1). Breggin emphasizes that the FDA’s list of antidepressant induced behaviors from agitation to mania is identical to those caused by PCP (phencyclidine) and cocaine, both known to cause aggression and violence (Ibid., p.4). Greenburg claims that the proof of the popular notion that depression is caused by a deficiency or chemical imbalance in the serotonin system remains weak (2002).

In 2003 the British Committee on the Safety of Medicines and the U.S. Food and Drug Administration circulated warnings regarding increased rates of self harm and suicide in children and youth under age 18 who were given paroxetine (Paxil) (Retrieved December 2, 2006 from <http://www.fda.gov/bbs/topics/ASNWERS/2003/ANS1230.html>). Breggin argues, “All antidepressants cause mania and mania is an acknowledged adverse effect in the FDA-approved label of all antidepressants” (Breggin, 2003/2004, p.32).

Reports state that the FDA official R. Kapit who officiated at the adverse evaluation in the approval procedures for Prozac as an antidepressant repeatedly cautioned [colleagues] that fluoxetine’s stimulant profile is almost identical to that of amphetamines. His concern was that Prozac’s stimulant effects (insomnia, nervousness, anorexia, and weight loss) might induce agitated depression, worsening the condition of some depressed users (Ibid., p.34). Agitated depression is an unstable condition having the potential to lead to violence toward self or others more often than non agitated (non-drugged) depression (Ibid.).

That antidepressants have bad side effects is undeniable. These vary from drug to drug and they offer an excellent reason not to take antidepressants. Nonviolent side effects include dry mouth, urinary retention, blurred vision, constipation, sedation, sleep disruption,

weight gain, weight loss, headache, nausea, gastrointestinal disturbances, abdominal pain, inability to achieve an erection or orgasm, loss of libido, agitation, anxiety, and more depression. To some extent choosing an antidepressant boils down to choosing the side effects that are least irritating for the individual.

It is possible that the reason there are so many side effects with antidepressants is that there is no full understanding of them. There is no certainty that scientists even understand the brain well enough to create an effective and safe drug for it. The pharmaceutical industry even admits they do not understand the inner workings of the drugs. Curiosity must be raised regarding the fact that they do not publicly admit to not understanding the organ for which the drug is created. (Dubovsky, 1997).

In December 2003, the following admission that GlaxoSmith Kline's drugs do not work for most people was released in the international news media.

Dr. Allen Roses, worldwide vice-president of genetics at GlaxoSmithKline, Britain's giant pharmaceutical company, acknowledged at a scientific meeting in London that *fewer than half of the patients prescribed some of the most expensive drugs actually derived any benefit from them* [italics added]. 'The vast majority of drugs – more than 90% - only work in 30 or 50 % of the people,' Dr. Roses said (Kirsch, Moore, Scoboria & Nicholis, 2002).

This article states that scientists know the truth but have deliberately concealed it from the public: most people are taking prescribed drugs that may very well not even work. Dr. Roses, a geneticist at Duke University, also reported at the London meeting that medicines for Alzheimer's disease are effective in less than one in three patients while cancer drugs are only effective in one quarter of patients. Pharmaceuticals for migraines, arthritis

and osteoporosis work in half the patients, according to Roses. “Most drugs work in fewer than one in two patients mainly because the recipients carry genes that interfere in some way with the medicine,” reported Roses (Retrieved February 3, 2007 from <http://www.commondreams.org/headlines03/1208-02.htm>).

Another consideration related to this story is that consumers of drugs are putting themselves at a risk of drug-induced adverse side-effects. FDA’s responsibility is to promote public health by ensuring that only effective, safe drugs are marketed, but there is no assurance that FDA is indeed following through with accuracy and honesty. There are those inside the drug companies, however, who know better. For example, in response to Dr. Roses’ admission regarding the truth about drugs, another industry scientist acknowledged, “[this] will surprise the public but not his colleagues” (Conner, 2003). This occurrence reveals a disturbing perspective from an ‘insider’ regarding the truth about pharmaceuticals and their creators and their trustworthiness.

What Is the Contribution of Psychological Drugs to Society?

We are never deceived. We deceive ourselves.

Goethe

The dramatic increase in the sales of antidepressants has not had any significant impact on public health, according to a study published in the British Journal of Psychiatry. Researchers claim that better treatment for depressive conditions is still needed in order to respond well to this problem (Helgason, Tomasson, & Zoega, 2005). In other words, at the present time antidepressants do not work all that well.

Most of the new products manufactured by the pharmaceutical industry are “me too” drugs, which are closely identical to current treatments but no better than drugs already on the market whose purpose is to treat the same condition. Approximately 75% of new drugs approved by the FDA are actually me-too drugs. They can be less effective than the current drugs, but if they are more effective than a placebo they can get the regulatory go ahead (Angell, 2004). The contribution of pharmaceuticals intended for anxiety and depression today remain questionable; Shealy believes the success rate of the best antidepressants is approximately 42% (2005, p.99).

Do Profit Margins Drive Drug Production?

In every house where I come I will enter only for the good of my patients, keeping myself far from all intentional ill-doing

The Hippocratic Oath

The estimated worth of the global giant pharmaceutical industry in 2003 was \$593 billion with reported average growth at 8 %. An aging population and innovative new “cures” are cited as primary reasons for the healthy profits. Almost half the profits are derived out of the United States where price controls for prescription medications are lacking. This research identified Pfizer, the world’s largest pharmaceutical company, as reporting \$45.2 billion in revenues in 2003, up 40% from revenues in 2002. Pfizer owns most of the market’s most widely used drugs such as Lipitor (the top seller in 2003), Celebrex, Norvasc, Zoloft, and Viagra. GlaxoSmithKline (mentioned earlier), second largest, just posted a 45% increase in fourth-quarter net profit on February 8, 2006, reporting net profits for October 1, 2005 to December 31, 2005 at \$1.96 billion. Glaxco projects continued

excellent growth for 2006 (Retrieved February 18, 2006 from <http://news.moneycentral.msn.com/provider/providerarticle.asp?feed=AP&Date=20060208>).

The drug industry employed 675 lobbyists in 2002, investing a record \$91.4 million for lobbying endeavors. They are reported to have “friends in high places,” which helps their cause. Public Citizen, a consumer advocacy group, maintains that 26 lobbyists representing the pharmaceutical industry’s interests are former members of the United States Congress. Pharmaceutical companies spent \$2.6 billion on advertising in 2001; \$424 million was spent on advertising in professional journals (Retrieved February 2006 at <http://collegejournal.com/forms/printContent.asp?url=http%3A//>). The Drug industry’s lobby is the largest in Washington and they give generously to political campaigns (Angell, 2005, xxvii).

Research shows that only 1 out of every 5 dollars collected by the pharmaceutical companies goes to drug research and some drug companies spend almost double the money on advertising and marketing than they spend on research. In 2001 when the United States’ economy was threatened by the 911 event, the pharmaceuticals maintained the status as *the most profitable* industry in the annual Fortune 500 list. The drug companies showed profits at 18.5 cents for every dollar of sales; this was 8 times higher than the median for all the Fortune 500 industries (Leduc, 2002, p.2).

Marcia Angell, a physician and former editor in chief of the New England Journal of Medicine, refers to the pharmaceutical industry as a “vast marketing machine” that thrives on monopoly rights and public sponsored research but produces few innovative drugs. In *The*

Truth About the Drug Companies – How They Deceive Us and What To Do About It, she reports

Now primarily a marketing machine to sell drugs of dubious benefit, this industry uses its wealth and power to co-opt every institution that might stand in its way, including the U.S. Congress, the Food and Drug Administration, academic medical centers, and the medical profession itself...I witnessed firsthand the influence of the industry on medical research during my two decades at the *New England Journal of Medicine*. The staple of the journal is research about causes of and treatments for disease...I saw companies begin to exercise a level of control over the way research is done that was unheard of when I first came to the journal, and the aim was clearly to load the dice to make sure their drugs looked good (2005, p.xxvi).

Do Alternative Approaches Show Beneficial Results?

Drugs are not always necessary, but belief in recovery always is.

Norman Cousins

Research was posted showing that approximately 80% of the response to medication was duplicated in placebo control groups (Kirsch et al., 2002). It states, “If drug and placebo effects are additive the psychological effects of antidepressants are clinically negligible” (2002). In the majority of trials of antidepressants placebos are shown to improve mood and change brain chemistry (Shapiro & Shapiro, 1997). Between 25% and 60% of depressed patients who are treated may have substantial reductions in symptoms. The high response rate in depression has led some to conclude that 50% - 75% of the apparent efficacy of

antidepressants actually represents the placebo. Also this high rate which may really reflect the placebo effect causes complication in antidepressant research because a new drug may not demonstrate a superior effectiveness to placebo. Proving efficacy superior to placebo can be difficult for any medical treatment, but is particularly challenging for antidepressants (Leuchter, Cook, Witte, Morgan & Abrams, 2002, p.122).

According to research the following is striking: the appropriate place of pharmaceutical treatments for psycho emotional disturbance should be reexamined and placebo appears to be an actual contender for treatment of psycho emotional disturbances. In 2005 researchers found that the magnitude of placebo response and drug response were heterogeneous and were statistically different among various diagnostic groups such as depression, anxiety, and psychotic disorders. The authors recommended placebo controls should be continued for newer drugs being tested for all psychiatric disorders. They recommended that psychopharmacology trial designs should be further refined as should evaluations by ethics committees (Khan, Kolts, Rapaport, Krishnan, Bordhead and Brown, 2005).

In response to the proposal that 50% -75% of the efficacy of antidepressant medication represents the placebo effect, with many depressed patients improving with either treatment, Leuchter et al. studied brain function of depressed subjects during treatment with placebo. Findings suggested that effective placebo treatment invokes distinctly different changes in brain function from those associated with antidepressant medication. This was the first study that has compared placebo and antidepressant medication treatments while documenting brain functional changes of all subjects during the treatment period. Leuchter et al. recommended future studies that characterize multiple dimensions of the nature of

improvement in patients that are placebo treated. They also recommended future studies designed to distinguish the effects of placebo and antidepressant agents using functional imaging, with the hope that mechanisms through which placebo treatment ameliorates depressive symptoms can be elucidated (Leuchter et al., 2002, p.122-129).

The false can never grow into truth by growing in power.

Tagore

Conclusion

Anyone who goes to a psychiatrist needs his head examined.

Samuel Goldwyn

At the present time the shadow associated with the pharmaceutical industry and the drugs they produce is undeniable and unfortunate for the well-being of all. Relaxation, the alternative to drugs, is recommended by the holistic community as the *optimum panacea for stress*, and as the research demonstrates, it offers a curative effect on depression and anxiety. The fact remains: *there are no drugs for relaxation* (N. Shealy, personal communication, December 17, 2006). Each individual must provide this for oneself.

This review has conveyed that relaxation is an experience consciously entered into by the individual who is committed to make a positive change in life physically, psychologically, emotionally, and spiritually. The dedicated practitioner of relaxation knows the value of self-regulation as an important component of health maintenance. It is empowering on all levels and can invoke what is known by many as ‘the healer within.’

Scientific studies show as much as an 85% success rate in reduction of stress, anxiety, and depression using relaxation. The two relaxation approaches, autogenic training and

RelaxMate, both demonstrate efficacy in developing self-regulation which supports health maintenance. They *are completely safe*, have no negative side effects, and are cost effective. They are superior approaches for treating stress, anxiety, and depression.

CHAPTER 2:

METHODOLOGY

*If we knew what it was we were doing
it would not be called research, would it?*

Albert Einstein

There are five categories discussed in Chapter 2. They describe the research design, the participants in the study, the materials used, the measurements used, and the procedures followed in the research study.

Research Design

The design for this study was a 2 X 2 Mixed Analysis of Variance. This was a comparative study in which two independent variables, Photostimulation and Autogenic Training were used. Each intervention was tested by one of two groups of participants to determine if either intervention would demonstrate greater efficacy than the other for reducing levels of stress, anxiety, and depression.

Participants

Recruitment

The recruitment of the study participants occurred through three primary initiatives on the part of the principal investigator (PI).

1) The PI contacted by telephone the director of the local community Alzheimer's day care center (The Tab Williams Adult Day Care Center) located in Winston Salem, North Carolina. An initial meeting was scheduled with the director. At this meeting the PI discussed

in detail with the director of the day care center her plan for the research study, suggesting that caregivers of patients with Alzheimer's disease might benefit from participating in the study. Being a study participant would benefit the caregivers by offering an opportunity to lower their own stress, anxiety and depression levels. The director approved the plan presented by the PI, considering it a service offered to help the family caregivers of patients at the center. She was equally enthusiastic about offering the same opportunity for her stressed out staff so that they could also benefit from participating in the study.

The PI and the director met and spoke by telephone and in person several times to work through logistical details for implementing the study so that it would run smoothly and accommodate the caregivers and the staff as much as possible. The director offered the use of the center's large conference room for all meetings relating to the study.

The PI made a colorful poster to advertise the study and help attract participants. It was strategically placed on the counter beside a notebook where family caregivers sign in and sign out their patient-loved one for day care. Caregivers' attention would readily be drawn to the poster when they checked in their loved one for day care (See Appendix A). The poster was placed in this location *three weeks prior* to the study date. Additional information about the study was placed beside the poster so that curious potential participants could read more about the study and discover how it might benefit them (See Appendix B).

A revised poster was placed *one week prior* to the study as an encouragement to caregivers who had not yet signed up and to inform them that it was not too late to sign up for the stress reduction study (See Appendix C). Often this population is too stressed and busy to take time for anything unnecessary to make it through the day. This includes an opportunity to participate in a stress reduction program. This would be construed as another

burden. By this time the PI had received enough responses from other resources to fill the 70 places in the research study.

Sign up sheets were placed on the counter top near the advertisement-poster so that people could sign up for a day of the week and the time that suited them to attend the initiatory meeting.

2) The PI is a certified Healing Touch Practitioner and is part of a community of people in this area who are interested in alternative medicine and mind-body oriented therapies. She has been active at the local medical center as a Healing Touch Practitioner-volunteer. A one page announcement about the research study was sent by email to this community and they were invited to forward the email to anyone they thought might be interested in participating (See Appendix B). People in this group were informed that participants would be accepted on a first come first serve basis. The PI's email address was given as the appropriate way to communicate about the study and to obtain additional information about it. Additional information about the study was emailed upon request (See Appendix D). Signing up as a participant for the study was successfully accomplished through using email. Participants were accepted into the research study according to the dates on their responding emails.

3) The PI had maintained an on-going list of names of people with whom she had discussed the research study during several months previous to the study date. A number of those were interested in participating in the study. She sent the one page emails about the scheduled research study dates to those people and she offered detailed information about the study (See Appendices B and D). The PI suggested that they forward the email to others who might be interested in participating in the study. People in this group were also informed that

participants would be accepted on a first come first serve basis. The PI's email address was given as the appropriate way to communicate and sign up for the study.

The response to these three efforts quickly provided more than the 70 participants needed for the research study. There was a waiting list of participant 'hopefuls' which was never utilized. Several individuals on the waiting list were so disappointed about not making it into the study that the PI sold them autogenic training Basic Schultz Tapes to use at home independently.

Criteria for Inclusion

In order to be included in this research study participants were required to be at least 18 years old and consider themselves stressed. The participants had to be of sound mind as determined by the PI and had to be able to complete the inventories used for measuring levels of stress, anxiety, and depression. Participants had to agree to comply with the research study procedures laid out in the consent form for the duration of the 4-week long study. Seventy individuals met these criteria (See Appendix E).

Criteria for Exclusion

Any participant with epilepsy was required to present their physician's written permission to be in the study. There were no epileptics in the study.

Characteristics

There were 70 participants involved in the study. Five were men and the rest were

women. Ages ranged from 21 to 70 with most participants being in their 40's and 50's. The majority of participants were Caucasian and of American descent. One woman was Italian. Three women were African American.

Geographic Location

There were 65 participants from the Winston Salem area. One participant was from Raleigh, North Carolina (2 hours from Winston Salem), and 4 were from Greensboro, North Carolina (45 minutes away from Winston Salem).

Materials

Two instruments were used in this study to determine their efficacy in assisting participants to reduce their stress levels. These are the Relax Mate and the Biogenics Basic Schultz tape.

RelaxMate

The Shealy RelaxMate II™ (RM) was used in this study (See Appendix F). As discussed in the Literature Review, the purpose of the RM is to balance the two hemispheres of the brain (thus invoking a state of relaxation and reducing levels of stress, anxiety, and depression). The RM looks like a pair of sunglasses and it is designed to fit most heads comfortably. The blue, red, or violet light installed in the lenses blinks simultaneously through a small opening of the lens portion of the RM in into the user's eyes.

Shealy Basic Schultz Audiotape

The participants using Autogenic Training in the research study listened to the Shealy Basic Schultz tape. This audiotape is developed and recorded by Dr. Norman Shealy. It is based upon the work of Dr. Johannes Schultz who introduced autogenic training in the early 20th Century as a form of autonomic self-regulation with a psychophysiological orientation. The Shealy Basic Schultz audiotape is a condensed version of Schultz's work and lasts 20 minutes (See Appendix G). A battery operated audiotape player (Walkman style) was given to each participant in the Autogenic Training group.

Journaling Toward De-Stressing

Designed by the PI and computer-produced, this simple journal's purpose was to encourage and support compliancy among the participants. It was intended to help participants establish a regular pattern of using the RM or the Shealy Basic Schultz tape. For some participants it might have been helpful for recognizing their progress or frustrations; those who were frustrated or those who had questions or doubts were encouraged to contact the PI. Participants were asked to return their journals on the last day of the study, making it possible for the PI to review comments and to gain insight into the study from the participant's perspective and for identifying modifications for design and development of future research (See Appendix H).

Flip Charts

The PI made a series of large 35" x 25" colorful flip charts to familiarize the participants with the study protocol and to highlight the important points. This was a visual

aid to support and strengthen the teaching process and to strengthen the resolve of clients to be successful and compliant (See Appendix I).

Measures

Zung Self- Rating Depression Scale

The Zung Self-Rating Depression Scale (also referred to as Zung depression rating scale (ZDRS)) was chosen for measuring levels of depression. This scale was designed by W.W. Zung to assess depression levels of patients diagnosed with depressive disorder (See Appendix J). It is a short (5 to 10 minutes) self administered instrument which quantitatively measures the intensity of depression (Zung, 1973, p.328). The scale is comprised of 20 descriptively presented items that rate depression's four common characteristics: the pervasive effect, the physiological equivalents, psychomotor activities, and other disturbances. Ten of the 20 questions are negatively worded, 10 are positively worded, and each question is scored on a scale of 1-4 on a Likert scale format.

The sum of the number correlates for each question is computed for a total raw score. The range of these scores is from 20 to 80 with higher scores indicating more depression. An index score is then computed by dividing the raw score by 80 - the total number of possible points - and then by multiplying that calculation by 100. Thus, the individual's index score is expressed as a percentage of the maximum score. The range is 25% - 100%, or 25 to 100. A score below 50 is within normal range; below 60 = mild depression; below 70= moderate or marked major depression; above 70 = severe depression (Zung, 1984). The Zung can be hand scored.

The Zung is a well-known scale and used worldwide for measuring depression. Numerous studies provide validity and reliability of the Zung Self-Rating Depression Scale (Dugan et al., 1998; Konstantinos et al., 2001; Biggs et al., 1978).

State Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI) was chosen for measuring levels of anxiety (See Appendix K). This self-reported inventory assesses two separate measures of anxiety: State Anxiety which infers a transitory emotional state and Trait Anxiety which describes relatively stable individual differences in the proneness of anxiety *as a personality trait*.

The State Anxiety (STAI-S) scale evaluates subjective feelings of tension, nervousness, apprehension, and worry, which are elevated when the stress response is invoked. It may also assess how an individual felt at a particular time in the recent past or how they are likely to feel in the future regarding a variety of hypothetical situations. S-Anxiety scores rise in response to physical danger or psychological stress and decrease resulting from training in relaxation (Spielberger, 1983, p.6).

Trait Anxiety (STAI-T) is different from State Anxiety in proneness of anxiety. Trait Anxiety may also reflect differences in individuals so far as the frequency and intensity with which an individual has experienced anxiety in the past. It implies differences in how individuals are likely to respond to stressful situations with varying degrees of State Anxiety (Ibid., p.4).

The STAI presents 20 question-items on the front (Form Y-1) and 20 questions on the back (Form Y-2) side of one sheet of paper which can be answered in 10 minutes. On Form Y-1 (STAI –S) the individual indicates which statement best describes the intensity of their

feelings on a graduated 4-point Likert scale. On Form Y-2 (STAI-T) the individual rates the frequency of their anxious feelings. Each question is given a weighted score and the scales can vary from 20 to 80. High scores indicate more state or trait anxiety whereas low scores indicate less.

Spielberger tested the stability and validity of test-retested intervals of the STAI over time periods of thirty to sixty days, using high school males and females as subjects. For the T-Anxiety test, the test-retest correlations displayed a range of .65 to .75. The S-Anxiety test provided lower test, re-test correlation coefficients, ranging from .34 to .62. A similar test was administered to undergraduate college students over test-retest intervals of twenty to 104 days. The T-Anxiety scale resulted in a test-retest correlation range of .73 to .86. The S-Anxiety scale then resulted in a test-retest correlation range of .27 to .54, which was expected. The S-Anxiety responses are thought to be based upon momentary circumstances during the time of the test, thus lowering its stability (Spielberger, 1983, p.31).

The STAI has been used extensively in research and clinical practice for decades, earning high regard and notoriety among professionals (Spielberger, 1983, p.6; Smith, 1974; Spielberger, 1989). It has been used increasingly in research focused on stress-related psychiatric and medical disorders and as an outcome measure in biofeedback research and its various types of treatments (Ibid., p.46). The STAI is easily hand scored.

Spiritual Well-Being Scale

The Spiritual Well-Being Scale (SWBS) (See Appendix L) is reported to be a general indicator of well-being and it is focused on assessing both individual and congregational spirituality. This instrument is used in clinical practice, outcome evaluation, congregational

assessing, research, and health care. The SWBS has been researched since its development in 1976. There are over 200 reported published and unpublished studies which have utilized this Scale. The SWBS yields an overall measure of quality of life from a spiritual perspective and offers subscale scores for Religious and Existential Well-Being. A self assessment of one's relationship with God is provided by the Religious Well-Being Subscale. How one sees his or her life purpose and one's satisfaction with life is indicated by the Existential Well-Being Subscale.

The SWBS consists of 20 items. Ten of these assess religious well-being and 10 assess existential well-being. It is scored with a Likert-type format ranging from 1 to 6, with higher scores representing greater well-being. Computing the sums of all 20 items produces the overall score. This Scale can be hand scored.

Procedures

Scheduling the Participants

The PI used the participant sign up sheets at the adult day care center as the guide for signing up remaining participants from other venues (discussed earlier under Participants). She communicated with all other respondents individually by email to admit them into the study and to schedule their meeting times at the adult day care center. The maximum number of people that the room could accommodate per meeting was 20, but 10 to 12 was preferable. The PI was careful not to over schedule any meeting times.

The PI scheduled two meetings each day, one at 9:00 AM and the other at 3:00 PM; each was one hour long. These times coordinated with the drop off of caregivers' loved ones in the mornings and the picking up in the afternoons. It was necessary to offer these meetings

daily because many of the patients at the day care center do not attend five days a week. The number of days per week and the specific attendance days vary among patients; this necessitated the scheduling of meetings daily to accommodate everyone. Staff participants coordinated their meeting times so that they could cover for each other during that hour throughout the week.

Additional Night Meetings

There were some participants who could not attend the day-time meetings. In order to accommodate those participants the PI scheduled two nighttime meetings over a two week period, one on Tuesday night and the other on Wednesday night the following week. One participant was leaving to go to Europe on a business trip before all the meetings were to be held. The PI met privately with him on a Sunday morning and prepared him for the study. With the addition of these two night meetings, all 70 participants were trained and officially inducted into the study.

The Space

The room where participants met to begin the study was the conference room at the Tab Williams Adult Day Care Center. The room was 16' x 23' and was well lit, quiet, clean, and attractive. There was a large 6' x 16' conference table surrounded by 20 comfortable chairs (See Appendix M).

The director of the center supplied bottled water, iced tea, and coffee for the participants. There was a basket of mint candy placed on the conference table.

The Initial Meeting With Participants

Preparation

To prepare for participants' arrival, the PI placed on the conference table in front of each chair to be used the following items: The Subject Informed Consent (See Appendix E), Participant Information Form (See Appendix N), The Zung Self- Rating Depression Scale (See Appendix J), The State Trait Anxiety Inventory (See Appendix K), and The Spiritual Well-Being Scale (See Appendix L). There were several cups of pencils placed around the table for people to use.

Welcome and Paperwork/Pretests

Most participants arrived on time and appeared eager to begin the study. The PI stood at the door welcoming each participant and introducing herself to those she did not already know. She suggested that they have some water or tea and select a seat at the table. The PI reviewed with the participants the forms described in the previous paragraph and she answered their questions. She made sure the participants understood that they could drop out of the study at anytime for any reason. The PI identified the three measurements (Zung, STAI, and SWBS), explained in general that they were the pretest-questionnaires, measuring instruments of their progress, and asked them to answer the questions on those inventories as accurately as possible. Then they filled out the forms and signed where appropriate.

Completing this paperwork required approximately 25 minutes. As each participant finished, the PI gathered the paperwork and pointed out a number of books on healthy living and stress that the PI had placed on the table for people to peruse while waiting for others to finish the forms (See Appendix O).

The Teaching

When all participants had completed the paperwork and inventories for the study, the PI collected them. She enthusiastically re-introduced herself, welcomed everyone again and thanked them for agreeing to be in the study. She complimented them for making the effort to become a participant in the study, emphasizing that they each had made the first step, an important one, to reduce their stress levels. She assured them that this effort would pay off through compliance, encouraging them to maintain a positive attitude about their new endeavor. Then with the help of the flip charts she engaged in an enthusiastic, animated fifteen minute teaching session about stress, the stress response, what it means physically and emotionally, and how their stress levels can be reduced (See Appendix I, 1-13).

Randomized Equipment Dispersal

Instrument assignments were randomized by having each participant draw a folded piece of paper labeled RM or AT from a bowl which was passed around the table where the participants were sitting.

Instructions for Using Equipment

The PI demonstrated how to use the equipment to the participants. She answered questions and helped some participants interpret the instructions, such as installation of batteries, and made sure they could operate the equipment correctly. Participants in the RM group assembled their RMs and tested them for good working order before leaving. The PI

assisted in resolving any operational difficulties. Most of the AT users knew how to work an audiotape, but many were interested in seeing the RM and hearing more about it.

Each participant was given printed instructions reviewing proper use of the RM and AT (See Appendix P and Q). These were provided in case any participant could not remember exactly how to use the equipment. Each participant was given a copy of Protocol for Expedited Review of Research in order to learn more about stress and the research, should they be interested (See Appendix R). In addition, each participant was given a Journal for De-Stressing and each received instructions regarding how to use the journal (See Appendix H).

The PI motivated and inspired every participant to tenaciously adhere to the protocol in anticipation of lowering their stress levels. Everyone was reassured by the PI that this approach was enormously successful, especially if their attitude was positive and if they *used the equipment as recommended*. The goal was for each participant to leave with an energized vision that he/she could and would find success in their relaxation practice.

Follow-up

The PI followed up weekly with all participants by email or telephone, sometimes both, to see how they were doing and to encourage them in their relaxation practice. The purpose of the follow-up was primarily for problem solving and for boosting participants' spirits toward reaching the goal. This effort on the part of the PI is strongly recommended in former studies on relaxation. People beginning a relaxation practice need a lot of positive encouragement to continue with the practice, especially in the beginning when some may not feel immediate results. Therefore, the phone calls and emails were upbeat, very positive, and

focused on helping the participant *believe* that the benefits of relaxation were worth the effort.

Some participants were having more difficulty than others. The PI used patience and an eager positive attitude to hear their frustrations regarding the relaxation practice and to help them move beyond the stumbling blocks. The physician in charge of the study was consulted numerous times by the PI on behalf of several patients, primarily older ones and those who were on several medications.

The Concluding Meeting

Preparation

During week 3 of the 4-week study the PI placed sign up sheets at the adult day care center to schedule the concluding meetings so that participants could take the posttests. These concluding meetings were offered on the same schedule as the initial meetings: everyday of the week at 9:00 AM and at 3:00 PM, however only 20 minutes was required to complete the three posttests (Zung, STAI and SWBS). There were also two night meetings scheduled for Tuesday and Wednesday nights in two different weeks, as was done for the initial night meetings.

Emails were sent by the PI to all participants not affiliated with the adult day care center so that they could schedule their concluding meeting. Scheduling was handled by email communications. There were no problems with the second scheduling procedure. The participants seemed to know what to do and how it would flow. They had also been told at the initial meeting that in 4 weeks they would return to take the posttest questionnaires. All participants were reminded to bring their journals to the final meeting.

The Meeting

Participants arrived for the second meeting in the same conference room at the adult day care center. The room was quiet and prepared for posttesting. The PI was close to the door, whispering and motioning to participants to come on in and get started on the three inventories (Zung, STAI and SWBS). Mints, pencils and bottled water were available on the conference table. With the posttests was an additional questionnaire prepared by the PI regarding each participant's observations during the study (See Appendix S). This was intended to give the PI further insight about the study.

The participants completed all paperwork within approximately 20 minutes. Each of the 12 meetings flowed as above. After the conclusion of most meetings there was a tendency for several participants to linger afterward to visit and converse more about the study and their experiences. Numerous participants suggested that an on-going relaxation group would be useful as a support for their continuing the practice. The PI agreed to lead a support group and promised to communicate about the date for the first meeting. Before leaving participants were given a printed note thanking them for being in the study (See Appendix T).

Requests for Equipment Purchase

During the study there were numerous requests to purchase the RelaxMate and Shealy Basic Schultz tapes. Arrangements were made for the purchase of both instruments and they were distributed at the end of the concluding meeting.

CHAPTER 3:

RESULTS

What is important in life is life, and not the result of life.

Goethe

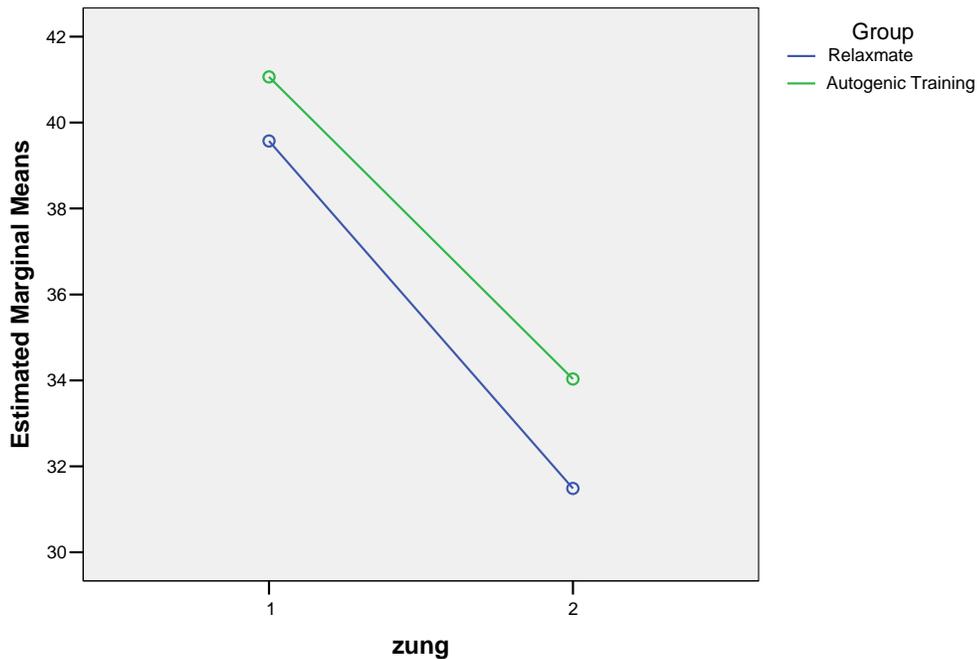
The purpose of this study was to compare the effects of two holistic treatments, photostimulation (using the Shealy RelaxMate) and autogenic training (using the Shealy Basic Schultz audiotape), in lowering levels of anxiety and depression. Their effects on enhancing spiritual well-being was also evaluated and compared. The statistical analysis was completed using a general linear model: pre-date and post date. The research question was: Does one treatment demonstrate better efficacy than the other?

The independent variables were the RelaxMate and the Shealy Basic Schultz audiotape. The dependent variables were pretest and posttest scores obtained on three measurements: the Zung Self-Rating Depression Scale (Zung), the State Trait Anxiety Inventory (STAI), and the Spiritual Well-Being Scale (SWBS). The posttests were administered to 65 of the 70 participants four weeks after the pretests. Five participants did not complete the study. Three AT users reported that they did not have time to be compliant, so they left the study. Two RM users failed to answer all the questions on all the measurements, reporting that as Buddhists they did not relate to the questions on the SWBS. Because their performance could not be fully evaluated they were not included in the statistical analysis, however they completed the study.

This chapter includes five graphs specific to each measurement listed above. There were significant main effects ($p < .001$) on all dependent variables. When collapsed across

both RM and AT groups, all changes from pretest to posttest were significant. The main effects show that both groups improved. There were no interactions between groups that rose to the level of significance; therefore the two groups showed no differential changes across pretest and posttest. The two groups did approximately the same and both improved. Therefore, the null hypothesis is supported: there is no difference between the two treatments. The RelaxMate and the Shealy Basic Schultz audiotape, both independent variables, demonstrated significant efficacy ($p < .001$) in lowering anxiety and depression and in enhancing spiritual well-being.

Zung Self-Rating Depression Scale



Main effect $F(1,65)=58.650, p<.001$

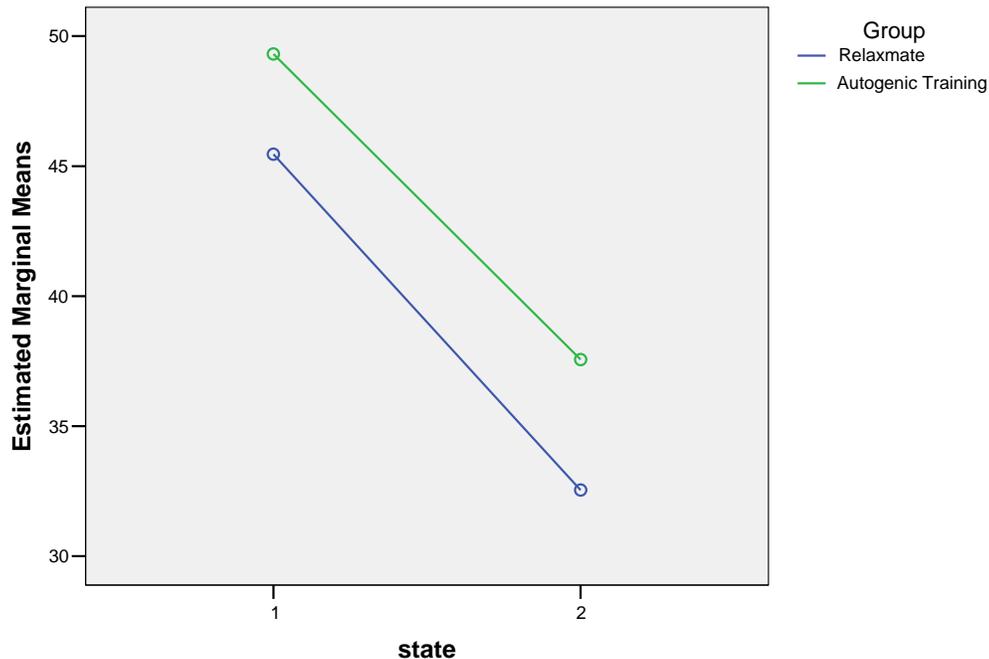
Interaction $F(1,65)=0.285, p=.595$

On the Zung Self-Rating Depression Scale the significant main effect, the change from pre to posttest, is statistically significant at $p<.001$. Lowered levels of depression, as measured on the Zung, among the 65 participants in both RM and AT groups was statistically significant. There was no interaction between groups, thus there is no difference in the effects between the RM and AT. Both instruments are effective at lowering levels of depression.

The statistical analysis of the Zung was done using raw scores instead of indexed scores which is the usual form reporting data. The PI discussed this with the statistician for

the study, Paul Thomlinson, Ph.D., who states that using either raw or indexed scores produces the same results. Zung himself has stated, “The index score is used to compare the patient score against norms, which are presented in terms of index scores. It should be noted that the conversion to index scores appears to serve no real function, and is generally ill-advised” (Zung, 1984, p. 595).

State Trait Anxiety Inventory State (Form Y-1)

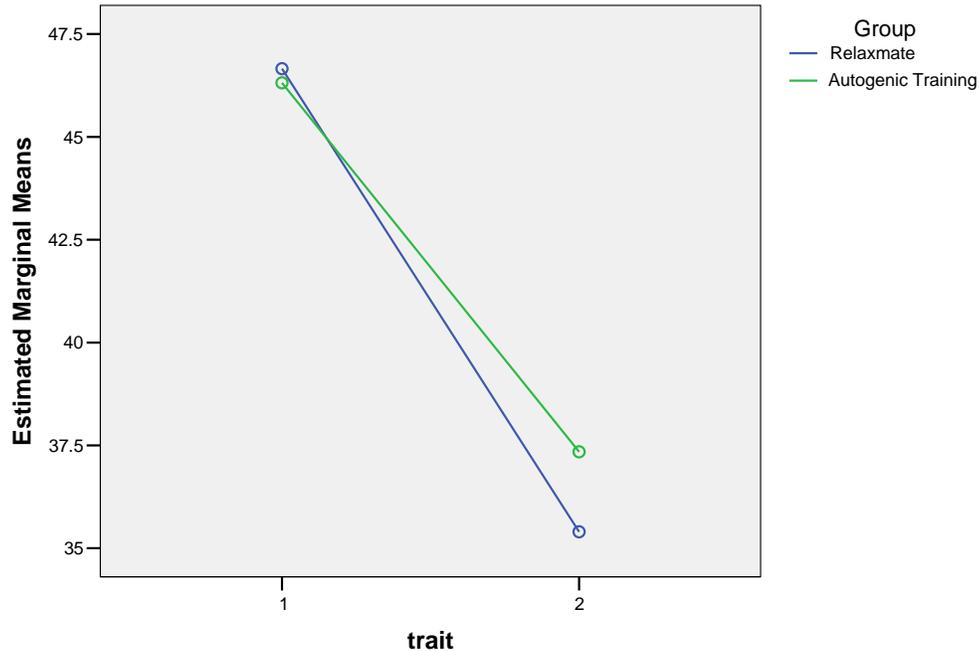


Main effect $F(1,65)=78.813, p<.001$

Interaction $F(1,65) =0.176, p=.677$

On the State Trait Anxiety Inventory form Y-1 (State Anxiety) the significant main effect, the change from pre to posttest, is statistically significant at $p<.001$. Lowered levels of state anxiety, as measured on the STAI form Y-1, among the 65 participants in both RM and AT groups were statistically significant. There was no interaction between groups, thus there is no difference between RM and AT in their effects on state anxiety. Both instruments are effective in lowering levels of state anxiety.

State Trait Anxiety Inventory Trait (Form Y-2)

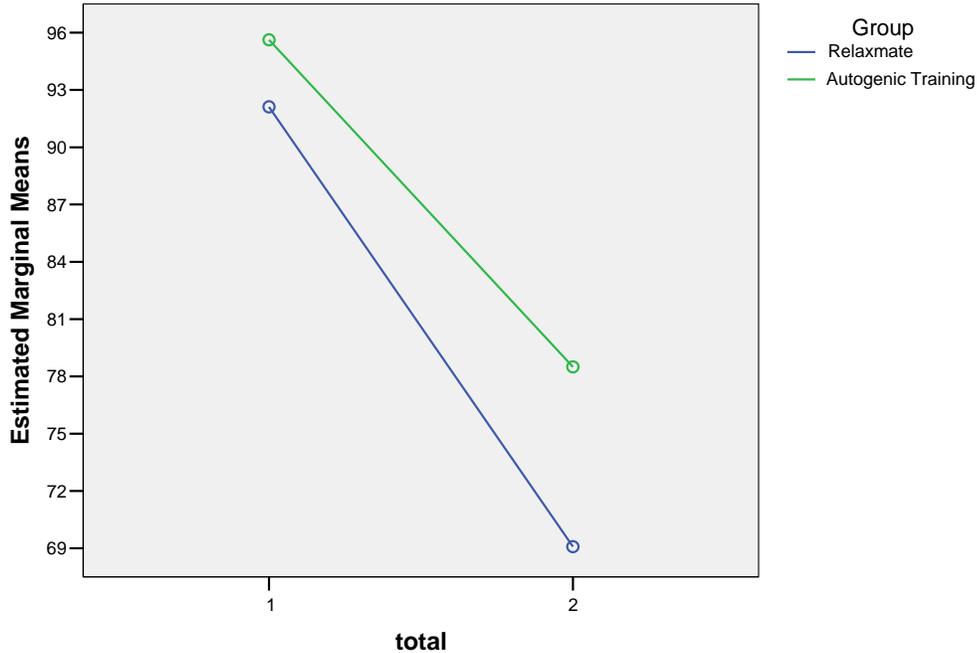


Main effect $F(1,65)= 81.805, p<.001$

Interaction $F(1,65)=1.047, p =.310$

On the State Trait Anxiety Inventory Form Y-2 (Trait Anxiety) the significant main effect, the change from pre to posttest, is statistically significant at $p<.001$. Lowered levels of trait anxiety, as measured on the STAI, among the 65 participants in both RM and AT groups were statistically significant. The graph shows an insignificant interaction between groups which was not enough to recognize. There is no difference between the RM and AT in their effect on trait anxiety. Both instruments are effective in lowering levels of trait anxiety.

State Trait Anxiety Inventory Total Scores

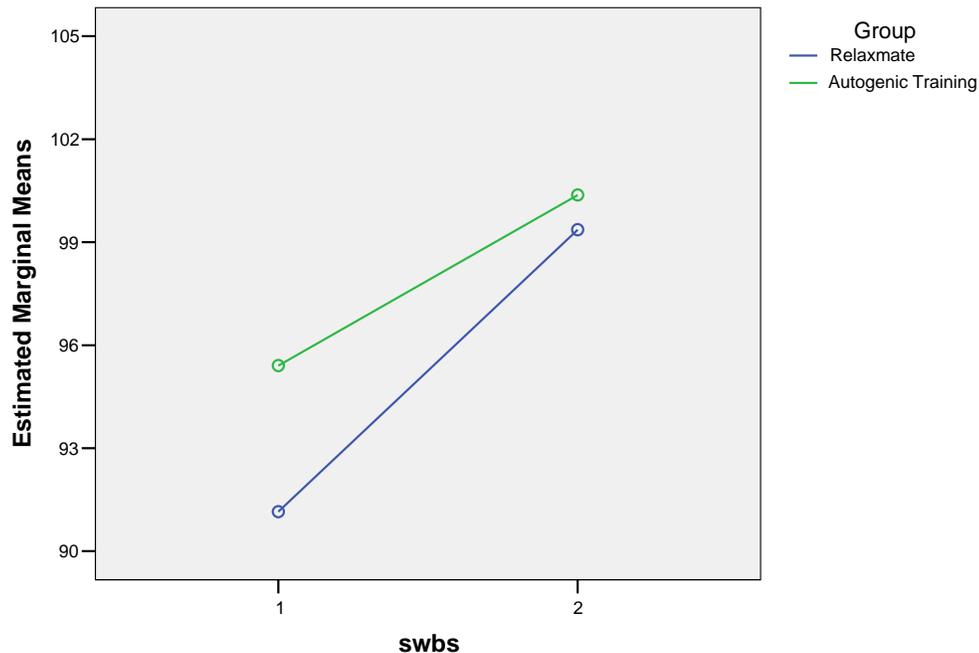


Main effect $F(1,65)=72.140, p<.001$

Interaction $F(1,65)=1.559, p=.216$

In totaling scores of forms Y-1 and Y-2 on the State Trait Anxiety Inventory the significant main effect, the change from pre to posttest, is statistically significant at $p<.001$. Lowered levels of anxiety as measured on both forms of the STAI, among the 65 participants in both RM and AT groups were statistically significant. There was no interaction between groups, thus there is no difference between the RM and AT in their effects of lowering levels of anxiety. Both instruments are effective at lowering anxiety.

Spiritual Well-Being Scale



Main effect $F(1,65)=16.415, p<.001$

Interaction $F(1,65)=0.994, p=.323$

On the Spiritual Well-Being Scale (SWBS) the significant main effect, the change from pre to posttest, is statistically significant at $p<.001$. Enhanced spiritual well-being, as measured by the SWBS, among the 65 participants in both RM and AT groups was statistically significant. There was no interaction between groups, thus there is no difference between the RM and AT in their effects of enhancing spiritual well-being. Both instruments are effective at enhancing spiritual well-being.

CHAPTER 4: DISCUSSION

*The range of what we think and do
Is limited by what we fail to notice
And because we fail to notice
That we fail to notice
There is little we can do
To change
Until we notice
How failing to notice
Shapes our thoughts and deeds*

Ronald David Laing

The results of this study are consistent with the work of Jacobson, Schultz, Benson, and Shealy, who have already demonstrated that relaxation can and does reduce levels of stress, anxiety, and depression. Although neither of the two treatments showed better efficacy than the other, there is statistical significance ($p < .001$) in the performance of both holistic treatments. Due to doubts concerning the efficacy of pharmaceutical treatments, coupled with the fact that the third top cause of death in America is iatrogenic, the data are uplifting for the holistic community and are profoundly important for everyone, especially the stressed.

Challenges Within the Study

*Who is the wisest man?
He who neither knows nor wishes for anything else than what happens.*

Goethe

Although the study flowed smoothly, there were several challenges noted by the PI which could have improved the study in general:

- (1) Participants on *multiple* medications appeared to have more difficulties adhering to the study protocol than those who were not on multiple medications. It was necessary for the PI to stay in closer contact with those participants and with the supervising physician in order to assuage problematic issues originating from the numerous medications they were taking. Including participants who are heavily medicated on pharmaceuticals should be carefully considered in future similar researches.
- (2) Regular communication with participants was an essential part of the four week study. The PI attempted to contact every participant by telephone or email and keep records weekly. This was important because prior research on relaxation has strongly suggested that encouraging participants is essential in order to foster compliance. Most participants needed and appreciated the encouragement offered by the PI and many reported that the personal contact helped them stay with the protocol. This connection to the PI gave them time to discuss and solve problems with equipment, relaxing, and sometimes life in general. For future studies the method of staying in communication should be evaluated. To what degree the PI's connection to the participants affected the results is unknown; however, past studies on the effects of relaxation have strongly indicated the necessity of the PI's role as "encourager."
- (3) Use of the SWBS should be re-evaluated if everyone in the study is not a conventional Christian. There were several Buddhists in the group as well as participants who did not relate to the [Protestant-Christian] inclination of numerous items on the SWBS. At the time this was the best spiritual well-being inventory available.

Observations and Related Curiosities

Responses by participants on the post study questionnaire gave rise to several curiosities. Participants were not required to identify themselves on the questionnaire but they were asked to answer *truthfully* several questions about the study. Most signed their names anyway, enabling the PI to make more accurate comparisons.

Most participants expressed gratitude for having been in the study. Most mentioned that participation had shown them how important it is to slow down their lives. Some participants reported that they had reconnected with themselves on a deeper level. This is inferred in the rise in the Spiritual Well-Being Scale scores. In the post questionnaire many of the RM users wrote voluntarily, "I love my RM!" Almost the entire RM group purchased their unit, at least a third of the AT group purchased an RM, and most in both groups purchased a Shealy Basic Schultz tape. Most of the 65 remaining participants reported that they intended to continue some form of relaxation in the future.

Compliance emerged as a perplexing anomaly and raises numerous quandaries. The RM users' compliance was twice that of the AT users. Among the 33 RM users 16 were 100% compliant while among the 32 AT users only half that many (8) were 100% compliant. This inspires several questions for consideration: Does it mean that only half the standard recommended use of AT is equivalent to a full recommended version of RM? The data show no difference in the *effects* of the two modalities but it is hard to ignore the fact that AT was used considerably less by the participants than was the RM. Does this mean that RM is easier to work into a stressed person's day than is the AT? Would the RM perform as well as AT with only half the compliance rate?

Participants reported that their main problem with AT was finding time twice a day to stop and listen to the 20 minute audiotape; most reported that they were too busy and too stressed out to honor the daily protocol. Conversely, RM users reported that they liked the fact that it could be used at night instead of interrupting their daily routines. Those few RM users with poorest compliance attributed it to the discomfort of the glasses and to their being annoyed by the blinking light.

Three people in the AT group dropped out of the study because they were too busy and too stressed to continue. Nobody dropped out of the RM group, and out of 35 participants only 5 RM users admitted to only 75% to 90% compliance (the lowest category offered on the questionnaire). Twelve reported 90%-100% compliance. When those 12 are added to the 16 RM users who were 100% compliant, 28 RM users were at least 90% or better, and according to the post questionnaire, they were “sold” on the success of the unit. Their voluntary comments confirm that enthusiasm.

In comparison, among the AT users 11 admitted to 75%-90% compliance, 4 admitted to less than 75%, while only 6 AT users reported 90%-100% compliance. When those 6 are added to the 8 AT users who were 100% compliant, less than half the AT group (only 14) used the equipment with at least 90% compliancy. Considering the inconsistencies of AT compliance it is a curiosity that this treatment shows such striking efficacy.

To the inquiry, “Do you plan to continue a relaxation practice in the future,” of the 35 RM users 29 responded “yes,” while 22 of the AT users responded affirmatively. Reasons for 6 negative responses among the RM group related to their discomfort while sleeping with the glasses. The negative responses among the AT users related to their not having enough time to do the AT exercises. There was a continual theme about lack of time woven throughout

communications with AT users. Participants' reports suggest that the RM is considerably more convenient to use than AT. This appears to affect compliance.

Comments Regarding Measurements

The State Trait Anxiety Inventory is designed to measure both state and trait anxiety; the results in this study show that reductions in both are similar. One might expect that the relatively brief period of intervention would yield a clear differential in the effect size, but this was not the result. Although there was not a formal effect size analysis done in this study to see if one might be larger than the other they are both a very large and a very significant finding.

It appears to be important that when people internalize what goes on while using these modalities over a period of time their *proneness* to stress is reduced. This is what the trait anxiety portion of the STAI measures. It is extraordinary that not only do these modalities appear to change how one deals with stress but they also appear to change the extent to which one might prevent it. This suggests that trait anxiety is probably not as fixed as Spielberger thought. The findings lead one to consider the possibility that trait anxiety is not immutable and can actually change in a short period of time. According to Shealy previous research demonstrates that trait anxiety is not as stable as one might think. After working with 30,000 patients with stress Shealy observed that this is a common finding across stress research (N. Shealy, personal communication, February 19, 2007).

In regards to the Spiritual Well-Being Scale two Buddhists in the study reported that they could not answer most of the SWBS items because "they did not relate." Consequently no scores were reported in the SWBS data for those two participants and they were omitted

in the statistical analysis. While the designers of the SWBS believe it is an effective integrative measure of health and well-being they acknowledge that more research with *non-evangelical* populations still needs to be conducted. Scales of this type are still in their infancy and the SWBS was considered to be the best available at the time.

Comments Regarding PI Participation

The PI recognizes that a clean research requires a separation between the assessor and both the treatment and participants. In the case of this particular study the PI was the assessor and she also worked closely with the participants, primarily as a cheerleader/ encourager to assist them in reaching their goal and in maintaining compliance. It is known that in order to maintain compliance in relaxation studies encouraging the participants is necessary. Immediate success is not readily found by many participants and the tendency is to give up and terminate the treatment *before* the effect is recognized.

Although the encouragement given by the PI to the participants in this study is not part of the treatment protocol (RelaxMate or Autogenic Training) it is acknowledged that this relationship is present throughout the study. Such was intended. There is also the probability that both the participants' attitudes about relaxation and their remarkable results were affected by the positive attitude and the encouragement offered by the PI. This effect was not measured. Moreover, the PI acknowledges that this study would have been cleaner if an individual other than the PI/assessor had been hired to be the encourager/ cheerleader. The distance between the PI/assessor and the treatment and participants would have provided a cleaner study.

Anecdotal Observations

There were several anecdotal stories worth reporting in this Discussion. Five months after the study the PI stopped by the Alzheimer's Day Care Center. Several of the staff who had participated in the study initiated a discussion with her about their experiences in the study. The receptionist reported that one of the biggest changes she had observed was with a staff member (referred here as 'Ann') who, after participating in the study, had totally changed personalities for the better. This was amazing to the receptionist. Before the study Ann had been generally grouchy, crabby, and difficult to work with. Everyone walked on eggshells around Ann. Following the study they noticed that Ann had become cooperative, cheerful, and pleasant to be around. "The old Ann just left," they reported. Ann, who was present at the telling of this result, responded that something had happened to her during the study. The grief and heaviness surrounding the death of her mother, which she had been carrying around for quite some time, had just lifted while she was using the RM. She said it had changed her entire attitude about life and it felt as if a dark cloud had just disappeared. Those in the conversation laughed about how remarkable it was that using the RM could invoke such a profound change and that it could last (Ann had been 100% compliant.). Ann still uses the RM nightly.

Another participant, a therapist who is in the PI's Stress Buster support group which started at the end of the study, shared the following account. Her husband noticed an obvious difference in her moods after she began using the RM in the study. (She was also 100% compliant). She reported that prior to the study she often came home very distressed and up tight which caused her to be a bit on edge with him. She was often snappy and impatient. After starting to use the RM her husband observed that the snappiness had left. She reported that now when life gets particularly stressful he laughingly tells her to put on those glasses. She still uses them nightly.

A third participant wrote the following report. “Before this study I had been so agitated mentally and physically due to a kidney infection for which I had been in detox, going down this god-awful experience for months. I can’t take drugs so it is hard to work with these things with medical doctors because they like drugs and don’t understand my allergy to them. I was crazy when I started the study. So I got out the tape and said, ‘Let me get out of this mental agitation,’ and I started listening to the tape. I was AMAZED at what happened. My body and mind just shut up, not only at night but during the day! ‘Hah!’ I said, ‘This is cool!’ So the next day I said, ‘I wonder what my body would tell me about the tape,’ so I asked. I was prompted to do alternate handwriting with my left hand. What my body said was: “The tape lets me be fully present in the body which enables it to relax, and then I go to a place where my mind isn’t chattering. The energy leaves the head and moves to the body, my belly in particular, and then I am in the *Zen no mind*. I am not running around crazy anymore.” When the left hand writes something wise it’s so amazing. “This is a way of accepting body wisdom. The tape helps me sleep better and let go of my worries and stress. Now I am usually asleep by the left hand warming part. And I also do it now by heart. This has been utterly amazing. AT is empowering. What I need is inside myself. I don’t have to rely on a piece of technology or a drug. Thank you for this opportunity!”

A Phenomenological Perspective

Knowledge does not enrich us; it removes us more and more from the mythic world in which we were once at home by right of birth.

Carl Gustav Jung

Several psycho spiritual questions from a phenomenological perspective emerge out of this work and should be acknowledged. Knowing that RM and AT do indeed invoke relaxation, closer scrutiny of the *activity within each approach* leads one to wonder if there is an unseen quality

about AT that strengthens its capacity to reduce stress with considerably less time invested than the hour per day of RM use. Is it possible that the requirement of passive concentration on the body has an additional positive effect for AT that is not present with RM use?

One must actually ‘practice’ AT internally and with intent (or some degree of body awareness) throughout the body and mind in order to elicit a result of relaxation. In comparison, the RM appears to be an approach which is applied externally “to” the user who merely puts on the glasses, closes the eyes, and falls asleep. There is no conscious interaction or passive effort between mind and body required of the RM user. Does this suggest the importance of the practitioner being present in and to the body (as with AT) for a technique to “work” optimally? Due to the passive concentration in the six formulae of AT is there more mind-body interaction going on with AT which strengthens it as a modality? If so, does this invoke or enhance the presence of what is known as the healer within? Does it create openings for the presence of spiritual beings/healers to assist the AT user? If this is true, then *what* or *who* is being invoked and *what* are they doing, if this is even a *doing*?

Luthe and Schultz suggest that after using AT daily for approximately six months it is not uncommon for the practitioner to have spiritual experiences. One might ask through what forces or beings would such a process develop? Might it be possible that for some this inner activity is already beginning to happen after only a month?

The RM has been referred to as “the lazy man’s route to relaxation” because it requires no identifiable effort from the user. While some may criticize this more “exteriorized” approach to relaxation for that reason, it might be valuable to remain open to the idea that people must start *somewhere*. Doesn’t everyone deserve a chance to achieve better health and well-being? Given the extraordinary results the RM offers, it too could lead to a spiritual endeavor by invoking the

stillness within one's mind and body and by encouraging the parasympathetic response. Future research could demonstrate where the RM might lead one spiritually. This could be true especially for those who would otherwise not have time or the perceived inner calm to adhere to the requirements of AT.

Recommendations for Future Studies

There are five recommendations for future research studies related to the present study. First, a follow-up study similar to this one to which would be added a third group using both RM and AT simultaneously is suggested for testing the benefits of doubling up on holistic approaches. When more than one sensory modality is engaged obviously there should be enhanced benefit. RM and AT appeal to visual and auditory senses and theoretically it may as well deepen or improve the effect when both are used together.

Second, with strong statistics supporting these two robust treatment approaches in the present study it is suggested that RM and AT be used together to compare their joint efficacy in reducing stress, anxiety and depression in comparison to the efficacy of a pharmaceutical protocol such as antidepressant medication. A non-drug treatment protocol such as AT and RM together may well prove preferable for anxiety and depression reduction and improvement in health and well-being, even under rigorous conditions.

Third, although in the user protocol the RM does not require any mind-body awareness or any activity on the part of the user as does AT (the AT requires 'passive concentration' and takes the user through the body during the AT process), future research might study how the RM could also lead one spiritually, and does it? Schultz and Luthe have demonstrated that some people begin

to have spiritual experiences after engaging in AT for six months. At the present time no research has been conducted to measure the onset of spiritual experiences for RM users.

Fourth, the results in both RM and AT groups for lowering stress, anxiety, and depression were very similar; however, as noted earlier compliance in the AT group was half that of the RM group. A study which examines this phenomenon more carefully is suggested. It might be of value to conduct a study in which the AT group uses the equipment only half as much of it's recommended protocol (i.e. one time a day instead of twice a day) while the RM group uses the RM as regular protocol suggests (an hour a day). This might lead to a better understanding of the differences between these two instruments.

Fifth, expanding on the above suggestion, a study investigating the comparison of modalities which invoke body awareness of the individual and which require some degree of activity of the individual (as AT does) to modalities which do *not* invoke body awareness of the individual and which appear to be more exterior or 'applied to' the individual without requiring his or her engagement in the activity of healing (such as RM). This would explore the value of mind - body awareness in the activity of healing.

Sixth, the PI was intrigued by the fact that compliance among the AT group was half that of the RM group. The participants entered the study with an eagerness to lower their stress. Some expressed anxiety about the necessity of their *being included* in the study, as witnessed by the PI when she read their emails which emphasized how critical it was for them to lower their stress and make changes in their lives. The PI observed that although these participants invested time to attend the meeting, fill out forms, complete the pretests, and begin to use the AT tape, half of the AT group were unable to follow through on the daily protocol. The AT tape is short and *promises* stress reduction, lowered depression, and lowered anxiety when used as directed. The question

remains, what is it - conscious or unconscious, noticed or unnoticed - that stops well intentioned people from actually following through on the process? An investigation into this enigma might provide an interesting research study.

Conclusion

This was a straightforward study whose goal was to determine if either of the two non-pharmacological modalities, RelaxMate or Autogenic Training (using the Shealy Basic Schultz audiotape), was more efficacious than the other in lowering levels of stress, anxiety, and depression. Each technique promotes processes of self-regulatory readjustment of a variety of disturbed autonomic functions. The null hypothesis is supported in this study. Neither instrument works better than the other; in fact they work very similarly. Both RM and AT are remarkably efficacious (statistical significance at $p < .001$) in lowering levels of stress, anxiety, and depression.

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APPENDIX A
Poster to Advertise the Study



Are you a
**STRESSED
OUT**
Person?

Consider de-stressing!

Doctoral candidate seeking participants for
clinical study focused on lowering stress levels.
You can benefit...very little time is required....
no drugs or substances ingested.

Call: 722-2646
Nancy Jane Calloway

Take one for Further
Information 

APPENDIX B

Information Emailed About Study to Solicit Participants

Nancy Jane Calloway, Doctoral Candidate
2633 Club Park Road • Winston-Salem, NC 27104
(336) 722-2646 • Nancyjane@triad.rr.com

Want to Reduce that Stressed-Out Feeling?

Who Qualifies?

Anyone who is stressed-out or anyone who feels anxious or depressed sometimes or all the time.

What does it require of me?

This study **compares** two *non-pharmacological*, safe and healthy methods for reducing stress, anxiety and depression. **Each participant will test one of these two methods.** Time-wise it will require (at the most) two 15-minute blocks of time daily whenever you choose, for the period of four weeks. For example, you may choose 15 minutes before you rise in the morning and 15 minutes before bed at night, or whatever suits your schedule. You do not have to be in town to do it. You can participate no matter where you are because it is easy and you might just like the results.

We will need to meet twice for less than an hour. There will be several dates so you may choose which **time** suits you.

- The first meeting is informational **when you** will answer two questionnaires **and receive your materials** and instructions.
- At the end of the month we will meet again **for you to** answer the same questionnaires so the results can be compared and assessed statistically. The second meeting will be less than half an hour.

The dates will be announced once I have gathered the **70 participants needed.**

What if I am on medications or have a pace maker?

This study **does not conflict** with any drugs or implants. What will help is your desire to reduce your levels of stress, anxiety or depression!

When is the study scheduled? June 2006 and early July 2006

Physician in Charge? Dr. C. Norman Shealy, MD, PhD. is my chair and is the physician in charge of the study. Dr. Shealy is the founding president of the American Holistic Medical Association. He is a former Harvard neurosurgeon and developer of the two methods being tested. He holds 9 patents and has published over 300 articles and 22 books. He is committed to developing non-pharmaceutical ways to maintain good health.

If you are interested in participating or want to learn more, please call or email **Nancy Jane Calloway, 722-2646 (Nancyjane@triad.rr.com)**. You may send this email to others you know who might benefit from stress reduction. Thank you.

Nancy Jane Calloway
2633 Club Park Road
Winston Salem, North Carolina 27104
336-722-2646
Nancyjane@triad.rr.com
May 28, 2006

Dear Friends:

I am launching a research study for my doctoral degree and appreciate your help. Anyone over 18 years of age who is interested in improving their health using stress management is qualified. Also there is benefit to being in the study - possible lowering of your stress levels! In prior clinical trials 90% of participants noted differences in four weeks or less.

This is a study whose purpose is to compare two safe, non-pharmacological or invasive interventions which individually have been shown in clinical trials to lower levels of stress, anxiety and depression. The purpose is to discover if one works better than the other. Dr. C. Norman Shealy, M.D., PhD. is the supervising physician for this study. Dr. Shealy teaches that depression is the most common 'disease' in America (affecting over 40% of the population) and that most illness traces back to stress. Stress, anxiety and depression are often companions. We might feel one but not the other, however, many of us feel stress much of the time. Dr. Shealy says stress appears first- before depression and anxiety.

In order to complete a valid, meaningful study that can make an impact in health science it is necessary to recruit 70 individuals with self claimed stress. Anyone who is depressed and/or anxious qualifies also, even if they do not feel stressed. Often this group feels that something is "off;" they are also prime candidates for the study. Anyone who resonates with any of those adjectives qualifies. This study is inclusive for individuals from all sociological economical backgrounds.

Those who are on medications for various conditions (including depression) may safely participate in the study because these interventions are not ingested; so there is no conflict with any drugs you might be taking. Exclusions are epileptics. Otherwise there are no health risks for participants. The objective of this study is to lower stress and improve health and quality of life, so that is how you might benefit from participating.

Requirements of Participants:

1- Show up at an initial meeting (there will be several dates for these) to fill out preliminary paperwork and receive one of two intervention instruments. Volunteers will answer a couple of short questionnaires which measure their level of stress on that date. This will take less than an hour.

2- For four weeks you will use your intervention daily.

One intervention requires two 15 minute blocks of time per day at any time you choose, wherever you choose. Many use it before getting out of bed in the morning and as soon as they get in bed at night.

The other intervention is used at night as you fall asleep.

3- At the end of four weeks I will again hold several meeting times when participants will answer the same stress questionnaires again. This enables us to measure the difference of scores before and after the intervention. The second meeting will last half an hour.

The interventions will be distributed randomly in order to maintain integrity of the study. Please arrive mentally prepared to be randomly assigned to either group.

Vacationing? Traveling? Not a problem! Both interventions fit into a purse, allowing one to continue using them despite the location. So this should not stop anyone from participation.

I appreciate your considering being a participant. This is an important study because so many people have experienced negative or dangerous side effects of pharmaceutical medications which are not always necessary for healing. Research shows that the third leading cause of death today in America is due to medical *treatment*, including but not exclusive to pharmaceuticals. It is important that we identify healthier, safer ways, other than chemicals, to improve our lives. Participation in the study is one way you can contribute to that advancement. Dr. Shealy developed both of these instruments which are perfectly safe (much safer than any drugs), and they have been used with no complaints with over 30,000 people. There have been no side effects reported from users of these methods.

If you have further questions please contact the principal investigator, Nancy Jane Calloway, at 336-722-2646 or by email at Nancyjane@triad.rr.com. The first 70 people who respond and meet the criteria will be used in the study, so don't delay if you are interested. Stress reduction is important for good health and it could change your life.

The initial meetings will be scheduled for late May and early June as soon as 70 participants are identified. Call or email if you plan to be a participant.

Be in touch! Consider DE-stressing today!
Love and Blessings,
Nancy Jane Calloway

APPENDIX C
Reminder-Poster for Participant Sign-up



Are you still

**STRESSED
OUT**

It's not too
Late to sign-up for the
De-Stressing Study!

De-stress now.

Help yourself now.

Sign-up for a time this week!

Your chance to De-Stress!

APPENDIX D

Letter to Friends About Study

Nancy Jane Calloway

2633 Club Park Road
Winston Salem, North Carolina 27104
336-722-2646
Nancyjane@triad.rr.com

Dear Friends:

I am launching a research study for my doctoral degree and appreciate your help. Anyone over 18 years of age who is interested in improving their health using stress management is qualified. Also there is benefit to being in the study - possible lowering of your stress levels! In prior clinical trials 90% of participants noted differences in four weeks or less.

This is a study whose purpose is to compare two safe, non-pharmacological or invasive interventions which individually have been shown in clinical trials to lower levels of stress, anxiety and depression. The purpose is to discover if one works better than the other. Dr. C. Norman Shealy, M.D., PhD. is the supervising physician for this study. Dr. Shealy teaches that depression is the most common 'disease' in America (affecting over 40% of the population) and that most illness traces back to stress. Stress, anxiety and depression are often companions. We might feel one but not the other, however, many of us feel stress much of the time. Dr. Shealy says stress appears first- before depression and anxiety.

In order to complete a valid, meaningful study that can make an impact in health science it is necessary to recruit 70 individuals with self claimed stress. Anyone who is depressed and/or anxious qualifies also, even if they do not feel stressed. Often this group feels that something is "off"; they are also prime candidates for the study. Anyone who resonates with any of those adjectives qualifies. This study is inclusive for individuals from all sociological economical backgrounds.

Those who are on medications for various conditions (including depression) may safely participate in the study because these interventions are not ingested; so there is no conflict with any drugs you might be taking. Exclusions are epileptics. Otherwise there are no health risks for participants. The objective of this study is to lower stress and improve health and quality of life, so that is how you might benefit from participating.

Requirements of Participants:

1- Show up at an initial meeting (there will be several dates for these) to fill out preliminary paperwork and receive one of two intervention instruments. Volunteers

will answer a couple of short questionnaires which measure their level of stress on that date. This will take less than an hour.

2- For four weeks you will use your intervention daily.

One intervention requires two 15 minute blocks of time per day at any time you choose, wherever you choose. Many use it before getting out of bed in the morning and as soon as they get in bed at night.

The other intervention is used at night as you fall asleep.

3- At the end of four weeks I will again hold several meeting times when participants will answer the same stress questionnaires again. This enables us to measure the difference of scores before and after the intervention. The second meeting will last half an hour.

The interventions will be distributed randomly in order to maintain integrity of the study. Please arrive mentally prepared to be randomly assigned to either group.

Vacationing? Traveling? Not a problem! Both interventions fit into a purse, allowing one to continue using them despite the location. So this should not stop anyone from participation.

I appreciate your considering being a participant. This is an important study because so many people have experienced negative or dangerous side effects of pharmaceutical medications which are not always necessary for healing. Research shows that the third leading cause of death today in America is due to medical *treatment*, including but not exclusive to pharmaceuticals. It is important that we identify healthier, safer ways, other than chemicals, to improve our lives. Participation in the study is one way you can contribute to that advancement. Dr. Shealy developed both of these instruments which are perfectly safe (much safer than any drugs), and they have been used with no complaints with over 30,000 people. There have been no side effects reported from users of these methods.

If you have further questions please contact the principal investigator, Nancy Jane Calloway, at 336-722-2646 or by email at Nancyjane@triad.rr.com. The first 70 people who respond and meet the criteria will be used in the study, so don't delay if you are interested. Stress reduction is important for good health and it could change your life.

The initial meetings will be scheduled for late May and early June as soon as 70 participants are identified. Call or email if you plan to be a participant.

Be in touch! Consider DE-stressing today!
Love and Blessings,
Nancy Jane Calloway

APPENDIX E

Subject Informed Consent

STUDY NAME: A COMPARATIVE STUDY OF THE EFFECTS OF
PHOTOSTIMULATION AND AUTOGENIC TRAINING IN REDUCING LEVELS OF
STRESS, ANXIETY AND DEPRESSION

STUDY ID#: 438

DATE: July, 2006

LENGTH OF STUDY: Four weeks

SUBJECT INFORMED CONSENT

DOCTOR IN CHARGE OF STUDY: C. Norman Shealy, M.D., Ph.D.

Almost everyone feels stress at one time or another and some experience more stress than others, and more frequently. Stress affects people differently because we are all unique. It seems to originate from our exterior but the results of it are experienced on the interior. Stress is linked to numerous diseases as well as to a decrease in immune function which works to keep us healthy. This study is concerned with two simple ways to decrease stress thereby increasing immune function in order to enhance one's chances for healthy and joyful living.

During the last century numerous scientists-pioneers have studied in detail the damaging effects of stress and how it affects our bodies. It is now known that depression and anxiety are two psychological responses to stress, in that if the stress continues over a period of time not only does it affect one's physical body negatively but it also affects one's psychological and emotional well being.

Scientific research shows that relaxation is one of the best antidotes to stress, but many people have difficulty achieving the level and *kind* of relaxation necessary to make a difference in their well being. It is difficult to overcome that stressful feeling that preys inside one's being. As a response to this experts have developed several techniques that are successful for eliciting relaxation correctly so that stress is actually lowered. These techniques also are shown to successfully reduce levels of depression and anxiety which are psychological responses to stress. This is good news for our stressed out culture!

This study will use two techniques that are efficacious in achieving relaxation, resulting in lowering stress, anxiety and depression. As a participant in this study you will be randomly placed in one of two groups. Each group will use, at their own home and on their own schedule, one of these two techniques. *Both* instruments have demonstrated in scientific experiments to be successful in helping people reach a relaxed state. Following is a description of these two techniques:

Autogenic Training -- This is a carefully developed 20 minute audiotape that walks one through the body and mind in a specific way so that at the end one is either very relaxed or asleep. One feels refreshed and energized.

RelaxMate™ – This technique is known as Photostimulation. The RelaxMate looks like sunglasses. There is a blinking light that blinks into the eyes (through the eyelids) from the lens. Use of RelaxMate results in balancing the two hemispheres of the brain. The result: complete relaxation.

PURPOSE:

This is a clinical comparative study of two techniques for achieving relaxation which lowers stress, anxiety and depression: autogenic training and photostimulation. Although scientific studies have shown that each method is successful in achieving relaxation it is not known at the present time which method, if either, works better.

INCLUSION CRITERIA:

Participants must be at least 18 years old and able to read English well enough to answer the questions on the pretest and posttest. They must show willingness to follow directions of the Principal Investigator and participate in the study. They must be in reasonable (self claimed) good health.

EXCLUSION CRITERIA:

Individuals with severe mental or physical disability determined by the Principal Investigator's observation are excluded from the study. Epileptics must show written permission from their physician. Individuals under the age of 18 years old are excluded from participation.

PROCEDURES:

1. The length of the study is four weeks.
2. You will receive either an autogenic audiotape or a RelaxMate to take home with you and use daily for a month. Audio tape users are to use the tape at least two times per day at your choice. RelaxMate users are to use the RelaxMate at night as you fall asleep for an hour.

POSSIBLE BENEFITS:

Stress, depression and/or anxiety may be reduced.

ALTERNATIVE TREATMENTS:

You do not have to participate in this study.

RIGHT TO LEAVE THE STUDY:

As a volunteer you are participating in this study of your own free will. You are free to leave the study at any time with no health risk. If you leave the study, returning the equipment and informing the Principal Investigator is expected and appreciated. She may be reached by telephone at 336-721-1563 or by email at Nancyjane@triad.rr.com.

CONFIDENTIALITY OF RECORDS:

Your identity as part of this study is and shall remain confidential. Results of the study may appear in printed material in the future but your identity will not be disclosed, unless required by law, which is very unlikely.

QUESTIONS:

This document has informed you about the study. If you have further questions please feel free to call the Principal Investigator at 336-721-1563 if you have additional questions or concerns.

SUBJECT STATEMENT:

I am signing this consent freely and am not being coerced. I understand that by signing this form I lose no rights to which I am entitled.

I hereby state that I have the legal capacity to enter into contract and that no guardian has been appointed for me.

I have read this consent form and I understand my role in the study. Any questions that have occurred for me have been addressed and answered by the Principal Investigator of the study.

I agree to cooperate with the study requests and follow the procedures as outlined.

My signature assures that I have read this consent form and that the questionnaires I answer may (if requested) be turned over to the Institutional Review Board or any Review Board required by law.

Subject's Signature

Date

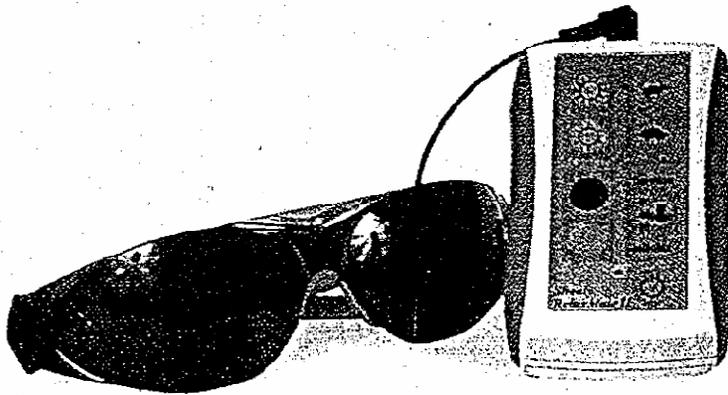
Subject's Name (Printed)

Principal Investigator's signature

Date

APPENDIX F

The Shealy RelaxMate II



NORM SHEALY, M.D.

RelaxMate II

Ever started to meditate, do yoga, or work on your energy-balancing practices—but realized you first needed a little help calming down

FEATURES

- Safe, proven photostimulation therapy for calming the mind and body—developed by Norm Shealy, M.D.
- Creates deep relaxation states known to reduce hypertension, anxiety, back pain, headaches
- Fine-tune your sessions with brightness, color spectrum, and frequency controls
- 20 to 60 minute timer
- Includes: RelaxMate II, LED glasses, instructions, and two AA batteries

and clearing your mind? For more than 30 years, Norm Shealy, M.D., has pioneered the use of “photostimulation”—therapeutic light pulsed at specific frequencies—to shift mental and emotional states. Does it work? More than 90% of Dr. Shealy’s 30,000 users report entering “a deep state of relaxation” within 10 minutes! Unlike similar devices on the market, the *RelaxMate II* uses a specific bandwidth of pulse frequencies and color chroma determined to be most effective in Dr. Shealy’s research. Used 30 to 40 minutes per day, the *RelaxMate II* has been shown to induce low-stress mind-body states associated with lower blood pressure, migraine relief, improved digestion, and an overall 80% reduction in stress-related illness. Made in U.S.A.

♥ THE SHEALY RELAXMATE II™

☺ ULTIMATE FOR RELAXATION!

☺ ENERGY BOOSTER!

☺ IMPROVED CONCENTRATION!

HOME...OFFICE...TRAVEL

2004 RELAXMATE FEATURES

- DEEP RELAXATION QUICKLY, USUALLY 5-10 MINUTES.
- SIMPLE TO USE
- TESTED AND ENJOYED BY OVER 25,000 PEOPLE
- LIGHTER WEIGHTMORE COMFORTABLE
- NEW LOWER FREQUENCY RANGE (1-7 Hz) AS REQUESTED
- ADJUSTABLE LIGHT PLACEMENT FOR EYE COMFORT
- REMOTE CONTROL POWER PACK

USEFUL REFERENCES

90 DAYS TO STRESS-FREE LIVING C. Norman Shealy, M.D., Ph.D.

THE RELAXATION RESPONSE Herbert Benson, M.D.

PRICE \$ 150.00 plus shipping

PHONE/ FAX/ E-MAIL SELF-HEALTH SYSTEMS
PH: 888-242-6105 FAX: 417-267-3102
E-MAIL: ORDERS@selfhealthsystems.com
5607 South 222nd Road Fair Grove, Missouri 65648

APPENDIX G

Transcript of the Shealy Basic Schultz Audiotape Used by AT Group

Schultz and Luthe emphasize a very slow introduction to each of the following exercises. Shealy developed a condensed 20 minute version which he reports having used for 32 years with consistently good results (N. Shealy, personal communication, n.d.).

The following pages refer to Shealy's methodology and verbiage, which Shealy designed and personally taped for his patients. Following is a transcription of the Shealy Basic Schultz tape, so that the reader may be well informed regarding exact content of Shealy's version of AT. This is the version used in the present study. Quiet places are provided strategically throughout the tape recording so that the patient may respond correctly to the directions. In order to assist the reader in the following script Shealy's actual words appear in **bold** type. This is a very slow moving and calming tape with plenty of time between exercises for the listener to slowly repeat the phrases and perform the exercise without feeling hurried. The sound of ocean waves plays in the background throughout the tape.

Exercise 1:

“Assume a comfortable position. Uncross your arms and legs. Close your eyes. Take a deep breath and let it go. Now focus your attention upon your right hand; sense it; feel it; talk to it. As you breathe in say to yourself, ‘my right hand,’ as you breathe out, ‘is heavy and warm.’ ‘My right hand—is heavy and warm. My right hand—is heavy and warm.’ As you say the words, feel for the pulsations of your heartbeat transmitted into your right hand. Imagine that you’re lying out in the sun in your

favorite part of nature, and the sun is beaming down upon the right hand, warming it through and through. Say the words; see the sun; feel the warmth and the pleasant heaviness of relaxation. And continue saying the words, ‘My right hand is heavy and warm.’”

Now switch your attention to your left hand. Compare the feelings between your right and left hands; and then say the words, ‘My left hand is heavy and warm. My left hand is heavy and warm. My left hand is heavy and warm. As you say the words, image the sun beaming down upon your hand. Feel the pulsations of your heartbeat transmitted into your left hand. Continue saying the words, ‘My left hand is heavy and warm.’ Now feel both of your hands. Do they feel equally relaxed, pleasantly heavy and warm.”

“Say these words: ‘My arms are heavy and warm.’ And as you say the words, feel *all* the parts of your arms from your shoulder tips right down to the fingertips. *Feel* the pulsations of your heartbeat transmitted throughout your arms. Imagine that you’re lying out in the sun and the sun is focused upon your arms; continue saying the words, feeling the pulsations and imaging and feeling the sun. ‘My arms are heavy and warm.’”

“Now compare the feeling in your arms, with that in your feet; and focus upon these words: ‘My feet are heavy and warm.’ As you breathe in, ‘my feet,’ as you breathe out, ‘are heavy and warm.’ ‘My feet are heavy and warm.’ *Feel* the pulsations of your heartbeat transmitted into your feet. Imagine that you are lying out in the sun and the sun is focused upon your feet, warming them through and through. Words and

images create feelings. Continue focusing your attention upon your feet, the words, the feelings, and the images.”

“Now say: ‘My legs are heavy and warm. My legs are heavy and warm.’ Feel *all* the parts of your legs from your groin right down to the tips of your toes. Continue saying, feeling, and seeing, ‘My legs are heavy and warm.’”

Exercise 2:

“Now switch to these words, ‘My arms and legs are heavy and warm.’ As you breathe in, ‘My arms and legs,’ as you breathe out, ‘are heavy and warm.’ With every breath that you take repeat the words, feel the pulsations of your heartbeat transmitted into and throughout your arms and legs. Imagine that you’re lying out in the sun in your favorite spot in nature and the sun is focused upon your arms and legs. The rest of your body is pleasantly shaded. Continue with the words, the images, the feelings. ‘My arms and legs are heavy and warm.’”

Exercise 3:

“Now switch your attention to these words. ‘My heartbeat is calm and regular. My heartbeat is calm and regular.’ As you breathe in, ‘my heartbeat;’ as you breathe out, ‘is calm and regular.’ As you say the words, create an image of something which is pleasantly calm and regular, such as a metronome or the pendulum of a clock. *Feel* the calm regular pulsing of your heartbeat within your chest; and continue focusing your attention upon the words, the feelings and the images. ‘My heartbeat is calm and regular. My heartbeat is calm and regular. My heartbeat is calm and regular.’”

Exercise 4:

“Now switch to these words: ‘My breathing is free and easy. My breathing is free and easy. My breathing is free and easy.’ As you breathe in, ‘my breathing,’ as you breathe out, ‘is free and easy.’ Create a symbolic image to you of something which to you is pleasantly free and easy. *Feel* the gentle freedom of the air entering and leaving your lungs. Continue focusing upon the words the images and the feelings with every breath that you take. ‘My breathing is free and easy. My breathing is free and easy.’”

Exercise 5:

“Now switch to these words: ‘My abdomen is warm. My abdomen is warm.’ Recognize that the abdomen is *all* that part of the front of your body from the bottom of the ribcage right down to your pelvis. Say the words as you breathe in, ‘my abdomen,’ as you breathe out, ‘is warm.’ ‘My abdomen is warm.’ *Feel* the sensations of your heartbeat deep within your abdomen. Imagine that you’re lying out in the sun in your favorite spot of nature and the sun is focused down upon your abdomen, warming it through and through. Words, images, feelings; continue on your own with the words, the images and the feelings, with every breath that you take. ‘My abdomen is warm.’”

Exercise 6:

“Now switch to these words: ‘My forehead is cool. My forehead is cool.’ As you breathe in, ‘my forehead,’ as you breathe out, ‘is cool.’ Imagine that you’re standing outside in your favorite spot in nature and a pleasant cool breeze is blowing across your forehead. *Feel the* pleasant coolness as you say the words, ‘My forehead is cool,’ over and over again, with every breath that you take, say the words, image the breeze, *feel* the coolness. ‘My forehead is cool.’”

“Now switch to these words: ‘My mind is quiet and still. My mind is quiet and still.’ As you breathe in, ‘My mind,’ as you breathe out, ‘is quiet and still.’ Create an image of something which to you is very pleasantly quiet and still. Words and images create feelings. ‘My mind is quiet and still.’ With every word, image, feeling, sense what’s happening. Be aware that you are creating your own reality. ‘My mind is quiet and still. My mind is quiet and still.’ Continue repeating the words, seeing quiet and still. Feeling the calm peacefulness deep within, as you say and see, ‘My mind is quiet and still. Keep your attention focused over and over. ‘My mind is quiet and still.’”

“Now be aware of the state of relaxation and balance which you have created within your body and mind. Sense how good it feels, and recognize that it’s okay to feel good. And feeling perfectly relaxed, and refreshed, rejuvenated, take a deep deep pleasant breath, open your eyes and stretch comfortably, feeling really really good about yourself.”

APPENDIX H
Journal Used By Participants

JOURNALING
TOWARD
DE-STRESSING

Participant's Name:

Inside Cover of Journal - Instructions

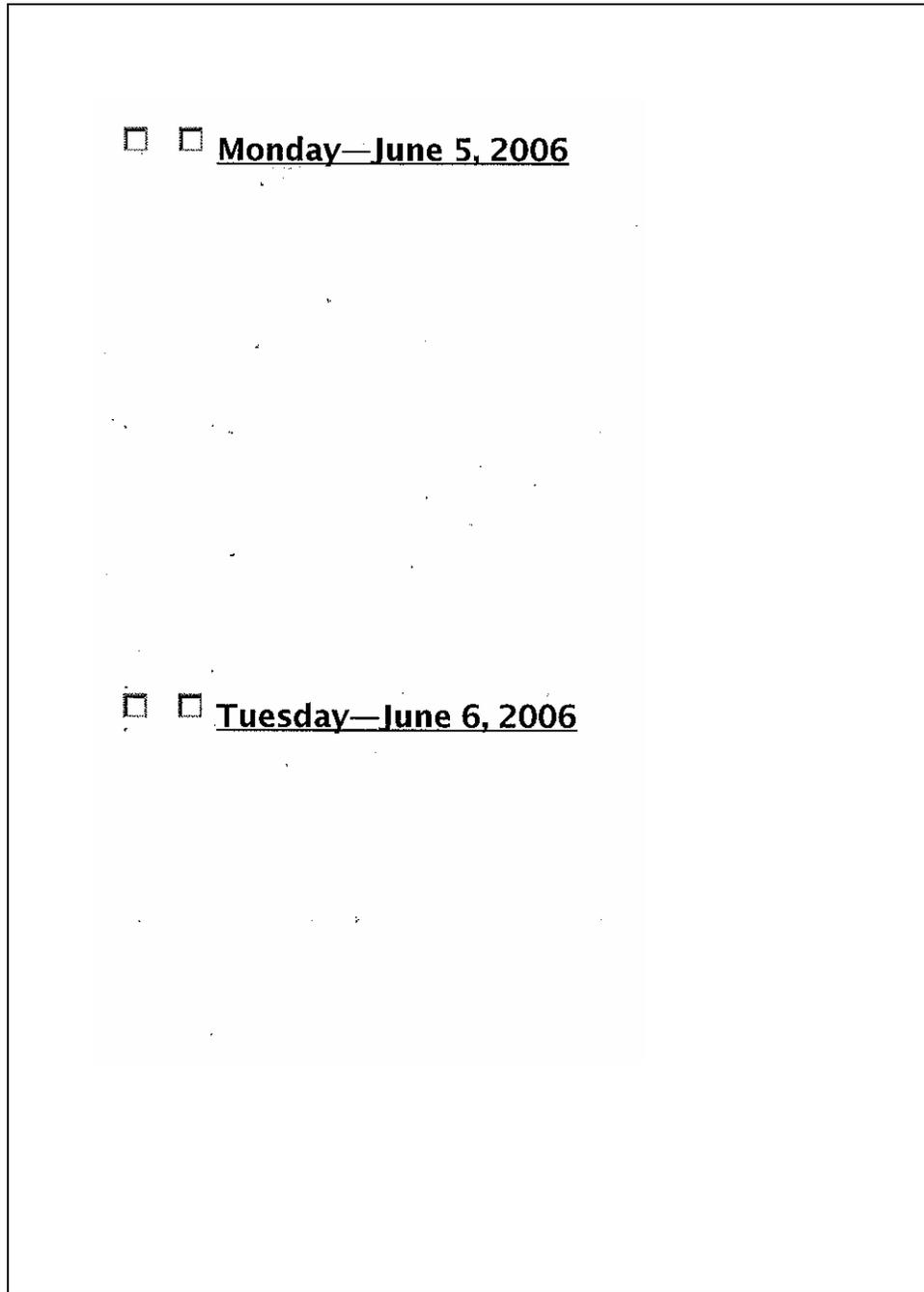
Please put a check by each date, indicating that you completed the daily practice with your intervention. Jot down anything/changes you notice—physically or mentally—during or after the practice. For example, sleep change, rest changes, feelings inside, more dreaming, feeling calmer, etc. If you use your intervention more times than required, please indicate that.

Please bring your journal in to the final meeting in four (4) weeks. The information you provide will strengthen the research and may be important to the statistical analysis.

Remember, this is all confidential. You may reach me for any questions at (336) 722-2646 or nancyjane@triad.rr.com.

Thank you.

Example of Typical Page in Journal



APPENDIX I
Flip Charts used for Teaching Participants



Stress

- Is an automatic physical response to any stimulus that requires you to change.
- Originates in the external world, but results are experienced internally.
- Is experienced on 4 levels:
 - ✓ Physical
 - ✓ Psychological
 - ✓ Emotional
 - ✓ Spiritual

The Stress Response

Hypothalamus processes information



Sends chemical messages to the
Pituitary Gland



Pituitary sends ACTH to the
Adrenal Glands



Cortisol is piled into the
bloodstream



Many hormonal activities in body

You are now ready for Fight or Flight

- Breath quickens
- Glucose & fats released into the body
- Senses heighten & sharpen
- Heartbeats faster (Up to 5x quicker than normal)
- Blood vessels constrict ~ helps blood get to brain & muscles
- Blood cells get stickier
 - To slow bleeding
- Stomach / intestines cease working
- Sexual arousal is quashed.

After the threat is over, the body
returns to Homeostasis



Physiologic Balance

So What's the problem?

The body does not Know
the difference in an

Event ^{And} _a Thought

The Stress response is activated
by

♡ Threatening Events

Thoughts ♡

♡ Worries

Fears ♡

♡ Feelings of Anxieties

Inner Naggings ♡

Do You See Yourself Here?

Too much pressure and responsibility

Health Worries

Child having trouble in school

Trying to keep your job

Worries about \$

Mad at someone

Car wreck

General
irritation

Exhausted

Caregiving

Trying to get a job

Teenagers/aging parents

Family Problems

Always in a stew

Can't sleep

Divorce

Traffic Jams

Argument with another

Marriage problems

★ **Your body does not discern.** ★

It calls in

the Stress Response



Stress is accommodated
by your
always being in the

Fight or Flight
mode.

♥ This is a serious health
risk to you. ♥

The Toll on Your Body

Which of these are you experiencing?

Allergic skin reactions

Anxiety

Constipation

Cough

Depression

Diabetes mellitus

Dizziness

Heart problems

 angina

 cardiac arrhythmias

Heartburn

Hypertension

Infertility

Infectious diseases

Irritable bowel syndrome

Nervousness, phobias

Pain of any sort

Rheumatoid Arthritis

Slow wound healing

Immune System depressed
~ susceptibility to disease

Sleep problems

Fatigue

Premenstrual syndrome

Aching joints

Q: Is it worth it to be stressed?

Best Safest Antidote for Stress

Relaxation!

Measured results:

decrease in heart rate,
slowed breathing,
muscles loosen,
body energetically more balanced,
immune system is stronger,
depression is reduced,
anxiety is reduced,
sense of well being is enhanced.

Quick Review:

Relaxation

A cultivated learned practice which awakens the ability to deeply relax all muscles in the body.

The benefit: Neuromuscular activity diminishes as the entire body rests.

Quieting of emotions

Greater resilience to changes (stress)

Depressive thoughts lessen

Anxiety is reduced

Key determinants for Health

1. Attitude

2. Good nutrition

3. Exercise

4. Sleep

Reminders

Relaxation Training is to help you achieve Self-regulation.

Relaxation will bring a psychophysiological shift in you.

Your **Positive Attitude** is essential. 

60-90% of health symptoms due to psychosomatic issues (Selye - mal-adaptation to stress).

Stress-underlying cause of most illness.

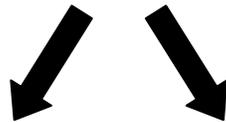
When you think

Stress

Use Relaxation



Homeostasis



inner balance

body balance

Health

Well-being

Inner calm

Life is in the breath.

**He who half breathes,
Half lives**

*Awareness of your breathing
patterns is a first step in
altering the physical, mental &
emotional effects of
STRESS on the body*

APPENDIX J

Zung Self-Rating Depression Scale

ZUNG SELF-RATING DEPRESSION SCALE

Patient's Initials _____

Date of Assessment _____

Please read each statement and decide how much of the time the statement describes how you have been feeling during the past several days.

Make check mark (✓) in appropriate column.	A little of the time	Some of the time	Good part of the time	Most of the time
1. I feel down-hearted and blue				
2. Morning is when I feel the best				
3. I have crying spells or feel like it				
4. I have trouble sleeping at night				
5. I eat as much as I used to				
6. I still enjoy sex				
7. I notice that I am losing weight				
8. I have trouble with constipation				
9. My heart beats faster than usual				
10. I get tired for no reason				
11. My mind is as clear as it used to be				
12. I find it easy to do the things I used to				
13. I am restless and can't keep still				
14. I feel hopeful about the future				
15. I am more irritable than usual				
16. I find it easy to make decisions				
17. I feel that I am useful and needed				
18. My life is pretty full				
19. I feel that others would be better off if I were dead				
20. I still enjoy the things I used to do				

Adapted from Zung, A self-rating depression scale, *Arch Gen Psychiatry*, 1965;12:63-70.

Presented as a service by

GlaxoWellcome

Glaxo Wellcome Inc.
Research Triangle Park, NC 27709
Web site: www.glaxowellcome.com

APPENDIX K
State Trait Anxiety Inventory

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-1

STAI Form Y-2

(One two-sided sheet with Y-1 on one side and Y-2 on the other side)

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Published by Mind Garden, In., 1690 Woodside Rd., Suite 202, Redwood City, CA 04061

www.mindgarden.com

APPENDIX L

Spiritual Well Being Scale

SWB Scale

For each of the following statements circle the choice that best indicates the extent of your agreement or disagreement as it describes your personal experience:

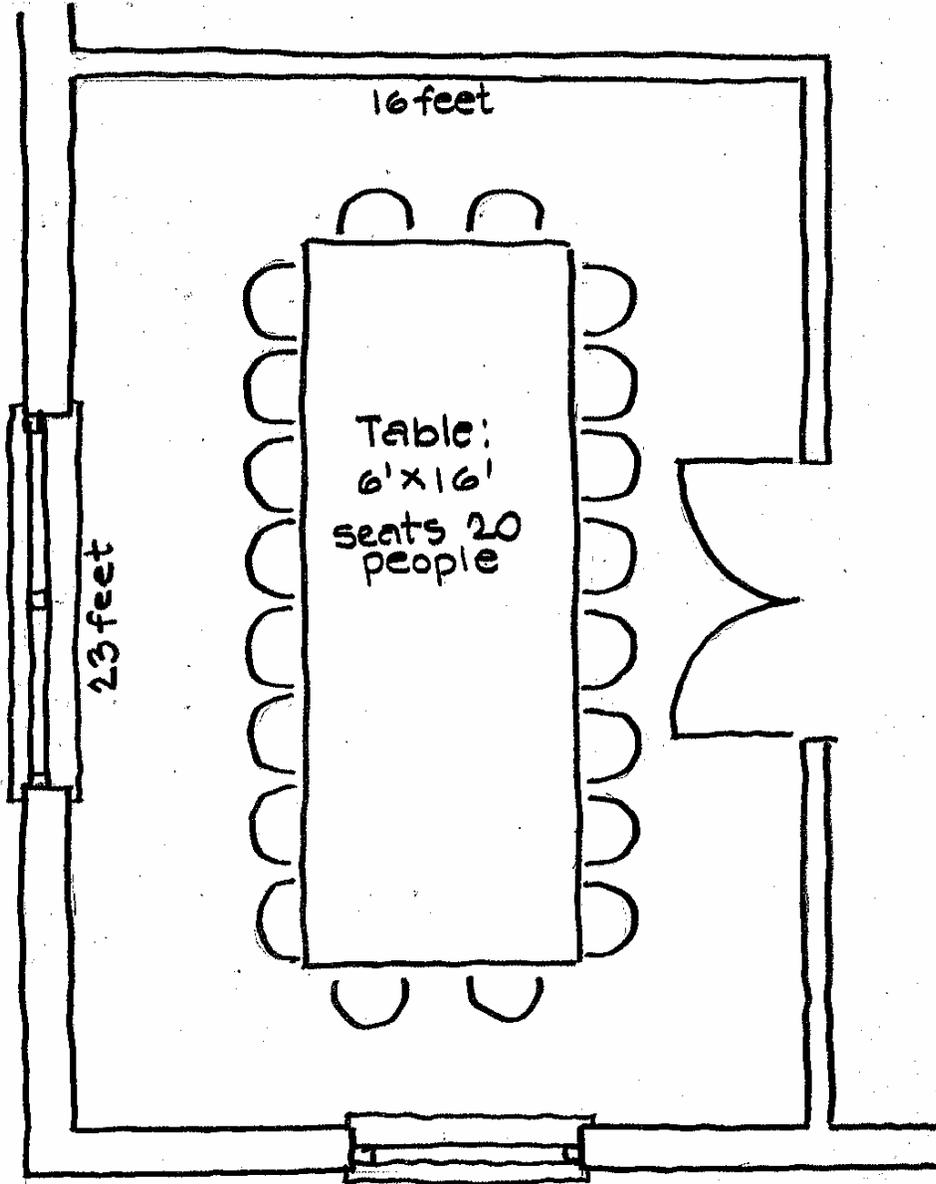
SA = Strongly Agree
 MA = Moderately Agree
 A = Agree

D = Disagree
 MD = Moderately Disagree
 SD = Strongly Disagree

- | | |
|--|-----------------|
| 1. I don't find much satisfaction in private prayer with God. | SA MA A D MD SD |
| 2. I don't know who I am, where I came from, or where I am going. | SA MA A D MD SD |
| 3. I believe that God loves me and cares about me. | SA MA A D MD SD |
| 4. I feel that life is a positive experience. | SA MA A D MD SD |
| 5. I believe that God is impersonal and not interested in my daily situations. | SA MA A D MD SD |
| 6. I feel unsettled about my future. | SA MA A D MD SD |
| 7. I have a personally meaningful relationship with God. | SA MA A D MD SD |
| 8. I feel very fulfilled and satisfied with life. | SA MA A D MD SD |
| 9. I don't get much personal strength and support from my God. | SA MA A D MD SD |
| 10. I feel a sense of well-being about the direction my life is headed in. | SA MA A D MD SD |
| 11. I believe that God is concerned about my problems. | SA MA A D MD SD |
| 12. I don't enjoy much about life. | SA MA A D MD SD |
| 13. I don't have a personally satisfying relationship with God. | SA MA A D MD SD |
| 14. I feel good about my future. | SA MA A D MD SD |
| 15. My relationship with God helps me not to feel lonely. | SA MA A D MD SD |
| 16. I feel that life is full of conflict and unhappiness. | SA MA A D MD SD |
| 17. I feel most fulfilled when I'm in close communion with God. | SA MA A D MD SD |
| 18. Life doesn't have much meaning. | SA MA A D MD SD |
| 19. My relation with God contributes to my sense of well-being. | SA MA A D MD SD |
| 20. I believe there is some real purpose for my life. | SA MA A D MD SD |

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APPENDIX M
Meeting Room Layout



Conference Room
Floor Plan: 1/4" = 1'-0"

APPENDIX N
Participant Information Form

Please answer the following questions below. I need to know how to reach you during the study. The answers to the questions will help the statistician to evaluate the data gathered in the study. Thank you very much. Remember, all is confidential.

Name _____

Address _____

Phone number _____

Email _____ Your age _____

Are you presently a caregiver of another person? _____ Please explain on back.

If you are not a caregiver what is the source of your stress? _____

How long has this been going on? _____

What are you doing or taking (including, for example, habits/activities, therapy, pharmaceutical drugs, sleeping aids) to help reduce or manage your stress? _____

On a scale of 0 to 10, 0 being no stress and 10 being as much stress as you can stand, which number best designates where you are today? _____

APPENDIX O
Books Laid on Table for Participants to Peruse
Listed Below by Title and Author

The Relaxation Response
By Herbert Benson, M.D.

Transforming Anxiety
By Doc Childre and Deborah Rozman, Ph.D.

The Relaxation and Stress Reduction Workbook
By Martha Davis, Ph.D., Elizabeth Eshelman, M.S.W., Matthew McKay, Ph.D.

Your Body Doesn't Lie
By John Diamond, M.D.

Stress Relief and Relaxation Techniques
By Judith Lazarus

Beyond the Obvious
By Christine Page

Frontiers of Health
By Christine Page

Your Body Speaks Your Mind – Understand How Your Thoughts and Emotions Affect Your Health
By Debbie Shapiro

90 Days to Stress –Free Living
By C. Norman Shealy M.D. Ph.D.

Life Beyond 100 – Secrets of the Fountain of Youth
By C. Norman Shealy M.D. Ph.D.

APPENDIX P

Printed Instructions Reviewing Use of Shealy Basic Schultz Tape

Autogenic Training

Autogenic Training (AT) is a very carefully developed relaxation procedure. It is a form of autonomic self-regulation (self-hypnosis approach) with a psychophysiological orientation. The rationale of AT is to enable autonomic self-regulation by eliminating environmental distraction, introducing imagery that accompanies autonomic self-regulation through a structured set of specific exercises which are easy to learn and practice on one's own. During the last century medical pioneers who have studied it have observed AT demonstrate the capacity to bring forth a healthy balance between the sympathetic (fight or flight) and the parasympathetic (rest, renewal, repair) workings of the autonomic nervous system.

When you practice AT it is important that you are comfortable. The exercises are best practiced in a dimly lit, quiet space and you are encouraged to wear unrestrictive, loose clothing and to put yourself in the most comfortable position possible. Your eyes are shut. Your legs should be relaxed with or without support under the knees and the feet should not touch each other, nor should you wear shoes. Your trunk, shoulders and head should be symmetric, relaxed and also comfortable. Your arms, also relaxed, are by the sides, not touching the torso and fingers are spread slightly, not touching the torso. These particulars will bring the maximum results.

If you sit in a chair both feet should be flat on the floor and the edge of the seat should not force pressure on the thighs. The back should be completely straight and arms should rest, relaxed, on the thighs. Eyes are closed, as in the horizontal position, in order to avoid any stimulation to the nerves.

One of the most important factors of AT approach is that you maintain a **passive and casual attitude** toward the intended functional changes. This is in contrast to “active concentration” which is usually thought of as an intense mental focusing, accompanied by goal directed will power with a specific end result in mind. **Passive concentration** used in AT is not result driven. As you passively concentrate on the autogenic formulas self normalizing activity of certain brain mechanisms is facilitated. There are occasions when brain-directed unloading (autogenic discharges) occurs, but these are considered a normal and healthy therapeutic process resulting from the passive concentration. If you do experience these with restlessness, take the attitude of the Observer. Watch the process and allow these discharges to occur. This is actually the AT working *to help you* unload some of the trapped angst inside your body.

Remember that your miraculous body is comprised of automatically functioning systems, mechanisms, and regulatory principles that require nothing from you. For example, the heart beats independently, the respiratory system is coordinated by nervous centers, not by anything you do, and likewise for other anatomical functions that operate whether or not you are aware of that. During the exercises what you need to do is not be concerned about any particular body part. Get yourself in the proper position and allow your body to function on its own as it naturally does and as it **wants to do** but often cannot due to the stress it is under.

Dr. Schultz says, regarding AT, that “It is in this connection that the autogenic standard formulas may be regarded as ‘technical keys’ which, when applied correctly, unlock or facilitate a psychophysiology complexity of brain-directed (*autogenic*) processes aiming at multidimensional readjustment and gradual normalization.” Autogenic therapy consisted of ‘mental manipulation of psychophysiological function.’ It is thought that the ultimate changes evolving from such practice occurs in the diencephalon, that portion of the brain containing the hypothalamus. Conscientious practice of autogenic exercises brings patients to a “neutral autogenic state” where there is great quietness and increased vigilance.

Use this for four weeks TWO TIMES DAILY at least. You may use it more if you wish. Look forward to the good results! Call me if necessary.

Nancy Jane Calloway

Principal Investigator

772-2646

APPENDIX Q

Printed Instructions Reviewing Use of RelaxMate

Photostimulation

Photostimulation is light therapy. Its history reaches back into antiquity when man used the sun as the healing light source. In the last century numerous medical pioneers/physicians have researched light therapy, noticing how much it helped their patients to heal from various illnesses which probably were due to stress. Once the stress was reduced the illnesses no longer had a good environment in which to thrive.

Since the discovery of the electroencephalogram, it has been known that the rhythm of the EEG follows photostimulation. It is well known that individuals who report feeling more relaxed (reduced tension), have increased EEG activity below 12 cycles per second (hz).

Dr. Norman Shealy, founding president of the American Holistic Medical Association, introduced this small, easy to use, and very safe RelaxMate (RM) as his version for balancing the two hemispheres of the brain and bringing one to a state of relaxation. He has used the RM with over 30,000 patients with much success and with few complaints.

The RelaxMate is the “lazy man’s way to relaxation.” All you need to do is lie down and be still. Put on the RM and let yourself go; let it do its thing. And it will. The blinking light goes through your closed eyelids, making its way to the hypothalamus which is the major switch for your bodily functions. The hypothalamus, in laymen’s terms, gives the signal for the body to relax. Dr. Shealy says that even today science does not know how this happens. We just know that it does work to bring about a state of relaxation and it is safe.

It is suggested for this study that you use the RM at bedtime. Put it on the 60 minute setting (the top one), turn off your bedroom light and go to sleep with it on. You are likely to

be asleep pretty soon. You may use the RM more than this as well, but for our study you are asked to use it at least one hour a day. Some people begin to feel relaxed within five minutes after starting to use the RM. Ninety per cent of people who use it do feel a change in their manner, in that they feel more relaxed in their waking life. Five to ten per cent of people do not adjust well to the RM. If you find that you are one of those, please call me at 722-2646 and we will discuss this. If you have **any questions** call me. In order to develop a big change in your life toward relaxation be aware that it **could** take up to three to six months of relaxation practice. So, if you do not feel the relaxation right away do not give up. Remember you did not get stressed out overnight! Just stick to the process and you will probably be like that 90% who definitely noticed the first change within weeks.

When the RM needs a new battery be sure you put the batteries in correctly. If you don't, it can ruin the unit. So follow the battery symbols and get them in there correctly the first try.

Using the RM is a wonderful way to start reclaiming your health, your well being and to remobilize your immune system so that it can do its job to protect you.

Good luck! Call me if you need to ask any questions, no matter how silly they seem!

Nancy Jane Calloway
Principal Investigator
772-2646

APPENDIX R

Protocol for Expedited Review of Research

Title of Research

A Comparative Study of the Effects of Photostimulation and Autogenic Training in Reducing Anxiety and Depression

Background and Theoretical Framework

Stress is a reality today, almost characterizing our life and times. It appears to be a fixed construct within our make up as a society. As early as his second year in medical school (1926) Hans Selye began his lifelong work developing his famous theory of the influence of stress on people's coping capacity and their ability to adapt to the pressures caused by injury and disease. He found similar symptoms among patients with a variety of ailments which he eventually interpreted as being their bodies' response to the stresses of illness. He called this assortment of symptoms a stress syndrome or general adaptation syndrome (GAS). An endocrinologist, Selye dedicated his life researching stress and he published over 30 books and more than 1,500 articles on stress and related problems.

Because we are unique, stress affects each of us differently. Stress seems to originate from our exterior but the results of it are experienced on the interior. Although our response to stress can start the ball rolling toward health imbalances, leading to eventual illness, all stress is not bad. In fact, through research Selye proved that stress, for better or for worse, is a constant influence in our existence, even admitting that without stress there would be no life.

Homeostasis is the body's tendency to maintain normal, internal stability by coordinated responses of organic systems which automatically compensate for environmental changes. It is a key component for health maintenance. During the last century extraordinary efforts have been made by medical pioneers to identify and refine specific methods of achieving relaxation which supports the body in its attempts to maintain homeostasis. Relaxation is the polar opposite of the stress response and research demonstrates that it too is essential for health maintenance (Dadoly, A. M. (2002) *Stress Control- Techniques for Preventing and Easing Stress*. Boston: Harvard Health Publications).

Physicist, physician and psychologist Edmund Jacobson in the late 1920's and 1930's studied stress and its effects on the mind and body. His focus was on the physiology of the body. He saw stress's major effects as neuromuscular hypertension and his panacea for it was physiologic relaxation – Progressive Relaxation. Jacobson dedicated his life to teaching patients skills for quieting the mind and the nervous system and he believed that could be achieved only in conjunction with quieting the muscular system. As the neuromuscular system rests the whole body rests. He emphasized achieving habitual relaxation, and his research shows that almost every illness known at that time responded positively to physiologic relaxation (Jacobson, E. (1938). *Progressive Relaxation*. Chicago, Ill.: University of Chicago Press).

Johannes Schultz was deeply influenced by the pioneering research of Oscar Vogt. A psychiatrist and neuro-physiologist, Schultz also dedicated his life to studying psychosomatic

medicine which he called the “mind body problem.” He worked in the early 20th century developing autogenic training. Vogt had noticed that when people practiced simple verbal statements to induce hypnosis they reported experiencing heaviness in the limbs and achieving a state of well being. Schultz pursued this route toward achieving relaxation but was interested in omitting the hypnosis feature since it tended toward patient dependency on the therapist instead of on oneself. Schultz focused on passive concentration, heaviness in the limbs, and simple formulae which eventually became known as autogenic training (AT). Today it is widely used in Europe and Japan but due to our infatuation with pharmaceuticals and fast suppression of symptoms this therapy is less known in the United States. In the 1950’s Schultz partnered with his student, Wolfgang Luthe, who continued researching AT, taking it to Canada. They conducted over 2400 research trials on AT, demonstrating its efficacy in achieving relaxation (Luthe, W. (1970). *Autogenic Therapy- Volume I Autogenic Methods*. New York: Grune & Stratton).

Cardiologist Herbert Benson, in the 1960’s, searched for methods other than pharmaceuticals to treat hypertension and heart related conditions. In the 1970’s Benson’s first book, *The Relaxation Response*, introduced to our society the possibility of healing numerous diseases just by learning to relax twenty minutes twice a day. Initially Benson’s research on the Relaxation Response (RR) involved Tibetan monks and transcendental meditators. Through this vast body of research Benson succeeded in convincing people that there was great merit in quick-time regular relaxing (Benson, H. (2001). *The Relaxation Response*. New York: Harper Collins).

What occurs in the RR is that the stress response (identified by Selye) is quieted. This is great news for whole body health because the hormones that rush through the body during the stress response have the potential to create deleterious effects throughout the body and mind. Like his forerunners Benson’s research demonstrated that the stress response and the RR are diametrically opposed and cannot function simultaneously.

During the same period of time, the 1970’s, neurosurgeon and psychologist, founding president of the American Holistic Medical Association, C. Norman Shealy was researching pain, hoping to develop a successful non-pharmacologic method for diminishing the effects of chronic pain in patients who suffered with this debilitating problem. He found that individuals who had pain often suffered with depression and anxiety, so his work became focused on holistic solutions, other than taking pharmaceutical medications, to relieve those symptoms as well. Shealy’s work included electromagnetic therapy, holistic health maintenance, and photostimulation (light therapy) as methods for supporting self regulation, and reducing pain, depression and anxiety. He holds numerous patents for therapeutic inventions, one of which is the RelaxMate™, hereinafter called RM, photostimulation goggles to be used in the proposed research study as a superior technique for reducing stress and inducing relaxation. A student of Jacobson, Coue, Osler, Selye and Schultz, Shealy also developed his own relaxation tape which is a combination of his work and that of Schultz. This tape will also be used in this research study. These two instruments, AT and RM both bring about the RR that Benson identified in his work, and which in clinical trials have been shown to reduce levels of stress, anxiety and depression (Shealy, C.N., Cady, R.K., & Cox, R. H. (1995). Pain, stress and depression: Psychoneurophysiology and therapy. *Stress Medicine*, 11, 75-77).

The proposed research is significant because of the negative effect of pharmaceuticals in this culture. The pharmaceutical industry has grown large and powerful, producing billions

of dollars worth of drugs which have numerous annoying to dangerous side effects and which often do not even *cure* the problem for which they were created. Research shows that at best, pharmaceutical medications treat the *symptom* (in less than 50% of cases), not the *cause*, and therefore do not bring about healing from a mind body, holistic point of view. Furthermore, the third most likely cause of death in America, after heart disease and cancer, is due to *medical treatment*. Because it is possible that there are *more deaths* caused by drugs than lives saved by them it is extremely important that other safe approaches are identified and that our culture learns about them (Angell, Marcia. (2005). *The Truth About the Drug Companies: How They Deceive Us and What to Do About It*. New York: Random House).

Relaxation is successfully achieved by each technique, AT and RM, used singularly and together. Some research shows better results when used together but this is not necessarily the case across the board. RelaxMate II was introduced in 2005. This version has a frequency of 1-7 Hz. and flashes a red, blue or combination of these two colors according to the preference of the user. These two instruments are efficacious and superior to pharmaceutical medications for eliciting the RR and *have no negative side effects* (Shealy, C. N., Cady, R. K., Cox, R. H., Liss, S., Clossen, W., & Veehoff, D. C. (1990). Brain Wave Synchronization (Photo-Stimulation) with the Shealy RelaxMate. (Research presented at the meeting of the American Academy of Neurological & Orthopedic Surgery, December, 1990).

Study Design

This study is a 2 x 2 Mixed Anova design which will compare data obtained from two randomly selected, equal sized groups, each using a specific intervention shown in former clinical trials to lower levels of anxiety and depression. Data will be gathered from a pretest and again, after four weeks, from a posttest to measure and compare changes made during four weeks period of the intervention. The dependent variables are levels of depression, anxiety and spiritual well being. The independent variables (the intervention) are the RelaxMate™ and Shealy's Basic Schultz autogenic training tape. The design investigates the effects of RelaxMate and Shealy's Basic Schultz autogenic training tape on levels of anxiety and depression and spiritual well being of the participants.

Population

The population will consist of approximately 70 male and female volunteers who are at least 18 years old and who consider themselves stressed. The reaction to stress will be evaluated by the Zung Depression Scale and the State Trait Anxiety Inventory to be certain they have elevated depression and anxiety levels which are above the mean.

Inclusion Criteria

Participants must be at least 18 years old and able to read English well enough to Answer the questions on the pretest and posttest. They must be willing to follow directions of the Principal Investigator and participate in the study. They must be in reasonable (self claimed) good health.

Exclusion Criteria

Individuals with severe mental or physical disability determined by the Principal Investigator's observation are excluded from the study. Individuals under the age of 18 years old or those unable to read/take the pre and posttests are excluded from participation.

Although there have been no published reports of a photo-induced seizure at frequencies below 15 Hz, anyone with known epilepsy will be excluded.

Discontinuation Criteria for Subjects

Subjects may discontinue the study at any time. They are asked to inform the Principal Investigator and to return the equipment so that it can be used by someone else. Refer to the attached Participant Consent Form, page 8.

Tests to be Used

The State Trait Anxiety Inventory (STAI) will be used to measure levels of anxiety. The Zung Depression Scale (Zung) will be used to measure levels of depression and the Spiritual Well-Being Scale (SWBS) will be used to measure health and well being. Dr. Shealy will be available to review any participant who has a score of over 75 on the Zung test for depression.

Consent Form for Participants

Please see page 6.

Protocol Monitoring:

Pre-Inclusion Screening – The Principal Investigator will talk with volunteers by telephone or in person, as necessary, to answer questions and screen the participants who want to volunteer for the study. Subjects will be asked to volunteer either for one hour at bedtime while falling asleep (for the RelaxMate group) or for two 15 minute blocks of time during the day per day (for the autogenic training group). The participants will agree to use these two interventions daily as prescribed by the Principal Investigator. They will be provided with a daily journal which is intended to help them keep up with the regularity of their intervention routine.

Testing – The Principal Investigator will meet with the subjects at a designated time, date and location at which time the three pretests (STAI, Zung, and SWBS) will be administered. At the conclusion of the four weeks of intervention the Principal Investigator and subjects will meet again at a designated time, date and location for the administering of the posttest.

Research Intervention—The two research interventions for this study are (1) the RelaxMate II, designed by Dr. C. Norman Shealy, and (2) the Shealy Schultz autogenic training audiotape. After completion of the pretests participants will draw a card out of a bowl. All cards have either a balloon or a star drawn on them. Those who draw the balloon will be given the RM and those who draw a star will receive the AT audio tape. This is to assure random distribution of the two instruments. The volunteers will receive verbal instructions about how to use them, particularly the RelaxMate, assuming most people know how to use an audiotape. Each subject will receive printed instructions to take with them, in addition to a journal to help them maintain regularity, and the phone number of the Principal Investigator. The Principal Investigator will maintain contact during the four week intervention period by telephoning each participant to inquire about any problems, questions or concerns related to their participation. This is primarily to encourage participants to maintain a positive attitude during the study.

Posttests – The volunteers will return four weeks later at the designated location in order to take the posttests (STAI, Zung, SWBS) so that scores on each test can be compared and analyzed.

Monitoring Personnel for Research

Chair of Dissertation-- Dr. C. Norman Shealy, Holos University Graduate Seminary, 5607 S. 222Road, Fair Grove, Missouri, 65648, phone number: 417-862-4625.

Primary Researcher – Nancy Jane Calloway, 2633 Club Park Road, Winston Salem, North Carolina, 27104, phone number 336-721-1563.

Research Results

Analysis – Scores of each pre and post test will be tabulated and analyzed for possible statistical significance.

APPENDIX S
Questionnaire About the Study

Circle your modality please. RelaxMate Tape

What was the biggest challenge for you in following through on your obligation as a study participant? Be honest. _____

- Rate your compliance: ___ 100% never missed a day
 ___ 90%-100% *almost* never missed a day
 ___ 75% - 90% off and on
 ___ less than 75% I just couldn't stick with it; hard for me

Did you feel that the modality was beneficial? _____ Please expound: _____

What would have helped you be more compliant? _____

Do you plan to continue with your Relaxation practice?

Did the initial meeting and teaching help you? _____ It's strengths/ weaknesses: _____

Constructive suggestions/criticisms regarding any aspect of the study: _____

APPENDIX T
Letter Given to Each Participant at the End of Study

Nancy Jane Calloway
July 12, 2006

To All Stress Reduction Study Participants:

This is to express my appreciation to you for your participation in this study to reduce stress. My hope is that you have benefited by actually reducing the stressful feeling you felt upon first starting the study. If you still feel more stress than you hoped to feel I encourage you to continue with the technique you have been using. Some people take longer to notice a difference, but if you stick with the program you should see a change. Most people do.

If you are satisfied with your progress I encourage you to continue to practice relaxation training. If you purchased the other modality know that when both are used together the results are heightened. Just keep relaxing, that is the main thing.

On the attached sheet is information about how anyone can call Dr. Shealy on his radio show on Thursday afternoons and ask any health question that comes to mind. He is a wonderful source for holistic health and well being, so take advantage of this opportunity. The show time is 2:00PM Central Time which is 3:00 PM here. This is a great opportunity to learn more about maintaining your health and well being.

Attached is my card and I invite you to call me if I can help you as you continue with stress reduction. Remember that many consider stress to be the *cause* of most diseases, so don't let it get YOU!

Again, many many thanks for your participation.

In Gratitude,

Nancy Jane Calloway
722-2646
Nancyjane@triad.rr.com

**DR. SHEALY ON THE
AIR EVERY THURSDAY**

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