ABSTRACT

PAPENFUSS, L. A. The Effectiveness of a Stress Managment Program on the Ability of Eighth Grade Students to Relax. M.S. in Health Education, 1986. 103 pp. (Dr. J. Curtis).

A three week stress management program was taught to 119 eighth grade students in Mt. Horeb, WI. 115 eighth grade students in Viroqua, WI served as the control group. Four measures were investigated; pulse rate, self-reports of stress (SRS), self-reports of conflict (SRC), and the A-state component of Spielberger's State-Trait Anxiety Inventory for Children. Pretest to posttest, pretest to post-post-test, and posttest to post-posttest comparisons were made on all four measures. The .05 level of significance was chosen for all measures. The t-test was applied to the measurements of pulse. Although the experimental group's pulses were lowered in all comparisons, the changes were not significant. The Mann-Whitney U test analyses were made for SRS, SRC and A-state. No significant changes were found in SRS, SRC or the pretest to posttest and pretest to post-posttest measures of A-state. The experimental group did have significantly lower levels of

A-state in the posttest to post-posttest comparison.

On the basis of these results, it was recommended that further studies with this age group include a longer intervention. Recommendations for the improvement of self-report measures and recording procedures were also made.

The Effectiveness of a Stress Management Program on the Ability of Eighth Grade Students to Relax

A Thesis Presented

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by

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This thesis is approved for the College of Health, Physical Education and Recreation.

Dean, College of Health, Physical Education and Recreation — Date July 22, 1986

Dean of Graduate Studies — Date July 22, 1986

DEDICATED...

To my parents———

Who in so many ways that they may never know, have taught me the most important lessons of my life:

to believe in God
to respect myself and others
and the meaning of integrity.

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I wish to express my deepest appreciation to several important people who made this thesis possible. First, my mother, who put in many long hours in typing this manuscript. Second, my thesis committee members, Dr. Jack Curtis, Dr. Gary Gilmore and Dr. Kip Zirkel, without whose help and direction this thesis would not have been completed. Third, Mr. Joel Worra whose computer assistance was invaluable. And finally, to Dawn, whose patience, support and understanding gave me the perseverance to succeed.

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CHAPTER I

INTRODUCTION

Today's society is a complex one. Due to its complex nature, people are faced with increased stress. The tension created by dealing with modern pressures can be associated with many major health problems. Spielberger (1979), states that:

> There is a clear connection between stress and a number of different diseases, including heart attacks, ulcers, arthritis, allergic reactions, and psychiatric conditions such as anxiety-neurosis and depressions. (p. 30).

Four major medical problems of industrialized nations have been identified as being stress induced. They are cardiovascular disorders, cancer, arthritis, and respiratory disease (Pelletier, 1976). To cope effectively with the stress of today's society is no easy accomplishment. Stress is a complex subject and too few people understand even its most basic principles.

The most widely used definition of stress is "the nonspecific response of the body to any demand made upon it" (Selye, 1979, p. 12). Stress results from an organism's attempt to adapt to change. It is a

normal response of the body to the demands placed upon it.

Stress can become detrimental when it accumulates. Exposure to stress for long periods or inappropriately setting off the stress response is termed "distress". It is distress which is linked with the problems mentioned previously (Selye, 1974).

Distress is most likely to occur when an individual is attempting to cope with changes in their life. The more changes that occur, the greater the chance for stress to accumulate. During adolescence, numerous changes occur including biological, psychological, environmental and social. With so much change occuring rapidly with little time for adapting to their changes, the chance of distress is enhanced. As Lerner (1981) states:

> Successful adaptation always involves appropriate coordination between our changing selves and our changing contexts. But it is in adolescence, and particularly early adolescence, that such adaptational stresses may be most critical, due to their similtaneity and multidimensionality (p.12).

Lerner goes on to say that high rates of teen pregnancy, alcohol and drug abuse, teen suicide and dropout are indicators of adolescent stress.

There are a variety of words that considerably overlap in meaning, such as "stress", "anxiety",

"tension", "pressure". "Stress" and "anxiety" are the two most frequently used terms. Stress refers to both the circumstances that cause the physical and psychological reactions and to the emotional results. (Spielberger, 1970).

Anxiety is related to stress in that anxiety encompasses the unpleasant emotions of tension, nervousness, fear and worry (Spielberger 1979, p. 17). It is concerned with the psychological results of the stress response and in particular the unpleasant emotions brought about by the response.

Spielberger (1970) describes two types of anxiety. State anxiety (A-state) deals with ".....feelings of tension and apprehension, and heightened autonomic nervous system activity at a particular point in time." (p.3). Trait anxiety (A-trait) refers to an individuals proness or personality set to perceive things as threatening. It is obvious from these references that, although stress and anxiety are some-what different in meaning, they do overlap considerably.

Many programs have been developed to help individuals effectively cope with stress. The goal of these relaxation programs is to prevent excessive stress and its detrimental effects. Physiologically, relaxation

is incompatible with the stress response. Relaxation techniques elicit their own response. The relaxation response includes the physiological changes of decreased oxygen consumption, heart rate, and arterial blood lactate. All of these changes are different from those reported during sleep or quiet sitting (Benson, 1975). Different types of programs help individuals effectively deal with stress. Some utilize relaxation training which focus on sensory awareness, breathing rhythms, and muscle relaxation to reduce stress. Biofeedback training programs use instruments to feedback information related to biological function which the individual can learn to modify. Meditation focuses attention on the elimination of any disturbing thoughts as a way of inducing relaxation (Pelletier, 1976). Exercise helps reduce adrenal hormones in the blood which prevents tension from building (Curtis and Detert, 1981). Few of these programs have been modified for use with general populations of adolescents. In this study, a relaxation program designed specifically for adolescents was used to help students learn to cope with stress.

Purpose

The purpose of the study was to add to the knowledge about stress management programs for adolescents. The researcher was interested in determining whether the inclusion of a stress management unit would be worthwhile at the eighth grade level. Finally, a goal was to find out if the program this researcher developed specifically for adolescents was effective.

Statement of the Problem

The problem of this study was to evaluate the effectiveness of a stress education program using pulse rates, self-reports of stress and conflict to determine the level of relaxation in eighth grade students. A sub-problem was to see if the same educational program would effect the student's perception of their own anxiety as measured by the A-state component of Spielberger's State-Trait Anxiety Inventory for Children.

Need for the Study

Garmezy 1981, believes that the study of stress and coping among children and adolescents is in its infancy. Especially when it is compared to the large

amount of literature available on stress in animals and adult human subjects. Due to the number of variables such as type of relaxation program, length of time for the program, and methods of measurement, many studies still need to be done.

Although adult human and animal research has been done in the area of stress management, no studies dealing with measuring the effectiveness of a stress education program on the ability to relax and anxiety levels of young teenagers could be found by this researcher. The high rate of suicides among adolescents, the number of teen pregnancies and the increased popularity of alcohol and other drugs are but a few of the problems that plague today's youth.

This decade will be one of greater focus on early adolescent populations by educators, administrators and social scientists. There are social implications in the alarming rise in teenage pregnancy, sexually transmitted diseases, substance abuse, runaways and dropouts. These indicators of adolescent stress will spawn research into their causes and ways of helping teens to deal with them (Lerner, 1981).

Numerous stress management programs are being developed to help adults cope with their stressors. As pointed out previously, adolescents share many of

the same problems, as well as problems unique to their age group. Yet very few programs are being developed for adolescents to help them learn to manage their stress. With the low number of stress management programs for adolescents, there is also a void in knowledge as to what is effective in teaching stress management skills.

Null-Hypotheses

Following are research hypotheses stated with the .05 level of significance established as the criterion for acceptance or rejection:

(1) The change score values of the mean pretest (baseline) pulse rates and the mean posttest rates of the experimental (Group I) will not be significantly lower than those of the control (Group II).

(2) The change score values of the mean pretest pulse rates (baseline) and the mean post-posttest pulse rates of Group I will not be significantly lower than those of Group II.

(3) The change score values of the mean posttest pulse rates and the mean post-posttest pulse rates of Group I will not be significantly lower than those of Group II.

(4) The change score values of the mean pretest (baseline) self report of stress (SRS) and the mean posttest SRS of Group I will not be significantly lower than those of Group II.

(5) The change score values of the mean pretest (baseline) SRS and the mean post-posttest SRS of Group I will not be significantly lower than those of Group II.

(6) The change score values of the mean posttest SRS and the mean post-posttest SRS of Group I will not be significantly lower than those of Group II.

(7) The change score values of the mean pretest (baseline) self report of conflict (SRC) and the mean posttest SRC of Group I will not be significantly lower than those of Group II.

(8) The change score values of the mean pretest (baseline) SRC and the mean post-posttest SRC of Group I will not be significantly lower than those of Group II.

(9) The change score values of the mean posttest SRC and the mean post-posttest SRC of Group I will not be significantly lower than those of Group II.

(10) The change score values of the mean pretest (baseline) A-state and the mean posttest A-state of

Group I will not be significantly lower than those of Group II.

(11) The change score values of the mean pretest (baseline) A-state and the mean post-posttest A-state of Group I will not be significantly lower than those of Group II.

(12) The change score values of the mean post-test A-state and the mean post-posttest A-state of Group I will not be significantly lower than those of Group II.

Assumptions

The following assumptions concerning the study were made:

(1) Subjects would be cooperative in responding to the STAIC and the self reports of stress and conflict.

(2) Subjects would be accurate in responding to the STAIC and the self reports of stress and conflicts.

(3) Subjects would accurately record their resting pulse rates and self reports of stress and conflict.

Delimitations

The study had the following delimitations:

(1) The population of the experimental group involved 119 eighth grade students attending Mt. Horeb Middle School, Mt. Horeb, Wisconsin during second semester of the 1983-84 school year.

(2) The population of the control group involved 115 eighth grade students attending Viroqua Middle School, Viroqua, Wisconsin during the second semester of the 1983-84 school year.

(3) Students in both the experimental and control groups had comparable socioeconomic backgrounds.

(4) The topic of stress has had no formal presentation and discussion in the educational settings for the experimental group at Mt. Horeb Middle School or for the control group of Viroqua Middle School prior to this research.

Limitations

This study had the following limitations:

(1) A time constraint was placed on the educational program. In consulting with the Mt. Horeb Middle School Principal, who was also the curriculum coordinator, it was agreed that a three-week program could be implemented to fill a change in curriculum.

During the previous semester health was changed from four meetings per week to five, which allowed for one additional three week unit per semester.

(2) The experimental group was encouraged to practice procedures and exercise outside of the regularly scheduled class times. The degree of "extra" practice was limited by the individual students motivation.

(3) Each sub group contained varying numbers of n's on different measures due to subjects not fully completing all recordings.

Definition of Terms

For the purpose of this study, the following terms were defined:

Anxiety:

Anxiety encompasses the feelings of tension, apprehension and worry (Spielberger 1979, p. 17). It is concerned with the psychological results of the stress response and in particular the unpleasant emotions brought about by the response.

A-State:

State anxiety (A-State) refers to anxiety experienced at a particular point in time (Spielberger, 1970). It is the level of tension felt at the moment.

A-Trait:

Trait anxiety (A-Trait) refers to a person's proneness to anxiety (Spielberger, 1970). It reflects how likely a person is to perceive something as threatening. It is a function of an individuals personality make-up.

Baseline Data:

The ten measures of pulse, stress and conflict taken ten days immediately prior to the educational program by both experimental and control groups.

Change Score Value:

The change score value is the difference in values from one test to another. Increases indicated by positive values, decreases by negative values.

Relaxation:

Relaxation is the physiological state that is the opposite of stress. Relaxation is more than just rest or sleep. It involves the physiological changes of decreases in cardiac output (pulse rate), blood pressure, metabolic rate, oxygen consumption and muscle tension. Relaxation also includes the psychological state that is characterized as a tranquil mind (Benson, 1975).

Resting Pulse Rate:

A measure taken by subjects for 15 seconds (and later multiplied by four) at either the carotid (neck) or brachial (wrist) arteries.

Self Report of Stress:

An individual's measure of the amount of stress he/she is experiencing at a given moment as measured by responses to a five point Likert scale.

State-Trait Anxiety Inventory for Children:

An inventory developed by Spielberger (1973) for measuring anxiety in elementary school children. It measures two types of anxiety, A-State and A-Trait.

Stress:

The body's reaction to potentially dangerous or harmful situations to help it cope with an increased demand upon it. Stress can be positive, (as in helping us to perform better) but excessive or accumulated stress is detrimental. Some of the physiological changes stress causes are an increase in cardiac output (pulse rate), metabolic rate, blood pressure, sweat and salivary output, and oxygen in the blood.

Stress Education Program:

A three-week program (ten, 46 minute sessions plus an additional five, 15-20 minute sessions)

developed by the researcher including a study of the elements of stress and relaxation, and the practice of basic relaxation skills.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction:

In order to address the present research problem, the literature review was organized into three categories;

1. Stress, anxiety, and their effects.
2. Relaxation training programs.
3. Measurement procedures in stress and anxiety.

Stress, Anxiety and their Effects

Stress:

Most definitions of stress focus on the response of the body to the demands which are placed upon it. (Selye, 1974, Lazarus, 1976, Basowitz, 1955). The demand is for adaptation or change to meet the stress-producing factors. Stress can result irrespective of whether that change is pleasant or unpleasant (Selye, 1974). Selye theorizes that the body responds to stressors in three stages which he calls the General Adaptation Syndrome (GAS), (Selye, 1974). The theory states that the body

normally functions at a certain level of resistance to stress. It is the level which the body has learned to cope effectively with, also known as a balanced state. When a demand is placed on the system there is a dip in the level of resistance which occurs as the body prepares to cope. This is the first stage of the GAS called the alarm reaction. It is the short period of time in which the body gears up to meet the stressor. Second, is the stage of resistance. In this stage, the body adapts to, or copes with, the stressor in order to regain a balance. This adaptation generally occurs due to the body changes that were made in response to the stressor. Neither of the first two stages are harmful unless the stressor is so overwhelming that we are unable to adjust, or that the stressor is not removed. In each of these last two cases, the body would move into third stage or stage of exhaustion. The normal balance is disrupted. The body falls below the normal level of resistance and becomes more susceptible to illness and disease.

Selye postulated that during the adaptive process "something" gets used up. He termed this "something", adaptation energy. He further hypothesized that each individual was born with a limited amount of adaptation

energy and the process of aging and death occur in conjunction with the depletion of this energy.

The body's response to stress-producing factors (stressors) is sometimes referred to as the "fight or flight" response, which is a series of body changes which prepare one to meet the stressor head on or to run away from it. The "fight or flight" response was first described by W.B. Cannon. He identified the body changes as increases in heart rate, breathing rate, metabolism and blood flow to the major muscle groups, thus preparing a person for fight or flight (Cannon, 1929).

The fight or flight response or stress response is actually a complex series of changes within the body. These changes center on the endoctrine and autonomic nervous system. Stressors trigger portions of the brain to release a series of hormones which result in the following changes;

increased blood volume and blood pressure,

increased stroke volume and cardiac output,

increased blood flow to skeletal muscles,

increased muscle tension and metabolic rate,

dilation of the pupils of the eyes,

decrease in blood clotting time,

redistribution of the blood flow to major organs,

relaxation of the muscles of the stomach and bladder,

relaxation of the bronchioles making it easier for air to enter and leave the lungs (Curtis and Detert, 1981). These changes all serve to aid in the survival of the person during times of severe stress. The intensity of the reaction is dependent upon the degree to which the stressor is perceived as dangerous or threatening.

Many times the stress response is beneficial. We may even feel that it is pleasant. It may help us to reach more of our potential or challenge us. "Eustress" is the term used to describe this positive stress. "Distress" is experienced when we set off the stress response inappropriately, or if it is set off over long periods of time without relief (Selye, 1974). It is distress which may lead to stress-related disease.

Selye once described stress as the "spice of life", by that he meant that we all need stress. It is what makes life exciting and meaningful, and without it life would be boring and dull. Perhaps the best analogy is provided by Donald A. Tubesing, an educational psychologist and president of Whole Person Associates in Duluth Mn.. He believes stress is like a violin string, put too much tension on it and it will

snap. If the tension is too loose it will not make music. The right amount of tension is needed for it to play beautiful music. (Tubesing, 1980).

Anxiety:

Anxiety deals with the unpleasant emotions such as tension, nervousness, fear and worry (Spielberger, 1979, p. 17). It focuses on the psychological aspects of stress. Lazarus (1976), differentiates between stress and anxiety by describing anxiety as one of the most important stress emotions. He goes on to say that anxiety is less immediate and more future orientated fear. Basowitz (1955), reports that anxiety is internally derived and unrelated to external threats. He describes anxiety as "the conscious and reportable experience of intense dread and foreboding" (p.3). He believes that the stress response occurs with "real" dangers while the response elicited by anxiety is caused by an "objectless" danger.

Stress response can be elicited irregardless of whether the stressor is perceived internally (anxiety) or outwardly (stress). A college student may worry about next weeks exam only to find it very easy for him/her to do well on. Their feelings of worry (anxiety) can trigger the same physiologic

response as if he/she had found themselves in the path of an onrushing truck (stress).

The Effects of Stress and Anxiety:

For the purpose of this section, the word stress will be used to encompass the effects of both stress and anxiety. According to Basowitz, (1955), one cannot distinguish between the stress response and the anxiety response.

Diseases which have been linked with stress are known by several names: psychosomatic disorders, stress disorders, diseases of adaption, or psychological disorders. Each is used to describe diseases which are either caused by, or aggravated by stress. Some of these diseases are stomach ulcers, intestinal colitis, hypertension, and migraine headaches. Lazarus, (1976).

According to Pelletier, (1977),

> Even the most conservative sources classify the following illnesses as psychosomatic: peptic ulcer, mucous colitis, ulcerative colitis, bronchial asthma, atopic dermatitis, urticaria and angioneurotic edema, hay fever, arthritis, Raynaud's disease, hypertension, hyperthyroidism, amenorrhea, enuresis, paroxysmal tachycardia, migraine headache, impotence, general sexual dysfunctions, sleep-onset insomnia, alcoholism, and the whole range of neurotic and psychotic disorders. (p.7).

Again while each of these diseases may not be solely psychosomatic each can be aggravated by stress. He

furthur states that most medical textbooks classify fifty to eighty percent of all diseases to psychosomatic or stress-induced origins.

Adaptation to change (good or bad) leaves the body more susceptible to illness and disease (Holmes and Rahe, 1967, Benson, 1975). This is especially true in cases where one is exposed to accumulated or prolonged stress.

There are two points which the researcher wishes to address here regarding this study and the literature on adolescents. First, a case can be made that adolesence is a time of greater vulnerability to stress. Adolescents experience many changes in areas involving independence, peer pressure, change in school settings, and concern over world problems (Mathews and Justice, 1981, Wolfgang, 1982). There are also the biological changes taking place at this time and the lack of confidence and feelings of uncertainty that accompany them. Although the effects of these changes and their resulting stress may not be the same as adults, it can be harmful. Duncan (1983), believes that highly stressed adolescents may be predisposing themselves to heart disease. He further believes that the stress response suppresses the immune system which increases the

chances of illness and disease. Lerner (1981), is less concerned with the clinical effects of stress on adolescents since he believes the behavioral effects of stress are more immediately important. The behavioral effects include teen pregnancy, alcohol and drug abuse, teen suicide, and school dropouts. It is unlikely that adolescents will show immediate medical effects in terms of serious disease. They may be showing immediate effects in terms of their behavior. Second, adolescents are less prepared to cope with stress than adults. They have fewer coping skills, fewer social supports and a narrower perspective based on fewer life experiences. (Duncan, 1983). There is a need for adolescents to learn skills that will help them in managing their stress.

Summary:

Stress is the body's response to demands made upon it. Anxiety is an emotional component of stress focused on internal fears of future stressors which are often "objectless". Their effects are often indistinguishable. The effects of accumulated or long-term exposure to stress are an increased susceptibility to disease. In adolescents, the disease may not be immediately evident, but there are behavioral patterns

which indicate problems in coping with stress.

Relaxation Training Programs

Many programs have been developed aimed at helping people to manage stress. Several of these have components in the educational program of this study and will be discussed here. The review of literature in this section was confined to studies which have implications for this study in terms of their theory, program and/or measurement procedures.

Anxiety Management:

Anxiety Management (AM) as developed by Suinn and Richardson (1971) involves the steps of: (1) training in deep muscle relaxation (progressive relaxation); (2) training in the visualization of pleasant settings, stressful settings and success settings of a person's own background (imagery); (3) controlling anxious feelings through the use of a control cue or by concentrating on feelings of relaxation and confidence.

In a study by Edie (1973), it was shown that AM training resulted in reducing the frequencing and intensity of stress among Colorado State University students, but when stress did occur, it interfered with their activities as much as before the treatment. This

would indicate that AM was effective in helping subjects with minor stressors but that the major stressors still presented a problem. A study by Vinson (1980), using twenty-three college students as subjects, showed that AM was effective in reducing anxiety. A standardized anxiety scale (IPAT), was used to measure anxiety. Both studies showed a decrease in effectiveness over time beginning with post-posttest scores in each study.

It appears that AM techniques can be successful in reducing anxiety, but to what extent is questionable. The variables of time for program, amount of practice, and subject interest, are but a few of the factors that may have influenced past results. The effects appear to diminish over time probably due to the lack of continued practice of the technique by participants.

Benson's Method:

Herbert Benson's method is aimed at eliciting what he termed the "relaxation response". This response is the physiological opposite of the stress reaction. Body changes in the relaxation response include a decrease in heart rate, lower metabolism, and a decrease in breathing rate. In short, these changes have the effect of bringing the body back to

its normal balance (Benson, 1975).

Benson's program takes its theory from the practice of transcendental meditation and forms of religious prayer. The components of meditation and prayer are put into four principles which Benson believes are key in eliciting the relaxation response. The principles are; a quiet environment, a mental device, a passive attitude, and a comfortable position. These principles are utilized to free the mind of outward stimuli. The result is fewer neuromuscular impulses, which brings about a more relaxed state. Benson advocates the use of the technique twice daily for ten to twenty minutes.

In his book The Relaxation Response, Benson states that practice of his method is effective in decreasing the physiological measures of oxygen consumption, respiratory rate, heart rate and blood pressure. A study by Benson, Marzetta, Rosner and Klemchuk (1974), showed Benson's method to be effective in reducing blood pressures of fourteen hypertensive subjects during a twenty week experimental period. Peters, Benson and Porter, (1977), showed this method to be successful in lowering self reported measures of health, performance, and well-being. The implication is that Benson's method can be

effective in reducing levels of stress both physiologically and psychologically.

Biofeedback Training:

Brown (1977) refers to Biofeedback Training as "a technique for learning voluntary control over automatically reflexly regulated body functions". (p.3). A specific physiologic activity is chosen and measured by the use of sensing instruments. These instruments send information via electrodes or transducers, about body functions. The information may be about such physiologic measures as heart rate, blood pressure, muscle tension, or brain waves. The information is amplified and displayed so that changes can be detected. Subjects attempt to alter their readings through conscious thought or by incorporating other relaxation techniques. Biofeedback training is popular in studies involving children, adolescents, and untrained individuals because it provides immediate and continuous information. (Allen, 1980, Blankstein, 1972, Lang, 1980, Matthews and Casteel, 1984). In a study by Matthews and Casteel (1984), 266 seventh grade subjects recorded wrist temperature readings before and after a daily relaxation training exercise. Although the day-to-day

readings flucuated, all showed improvement over the nine-month testing period.

Numerous studies have shown biofeedback training to be effective in lowering heart rate (Allen, 1980, Blankstein, 1972 and Dunbar 1972). In use with adolescents, biofeedback training is an important motivator for demonstrating the relationship of mind control with physiologic functioning. It helps subjects to see the connection between psychophysiological stress and the body's response. The monitoring of physiological functions, like heart rate, provide a means whereby subjects can recognize stressful situations.

Progressive Relaxation:

Progressive Relaxation (PR) was developed by Dr. Edmund Jacobson to aid the recovery of his patients. In his 1938 book, Progressive Relaxation, Jacobson outlined his relaxation program. It involved the progressive relaxation of muscles, that is, each muscle group was relaxed more and more with each practice. Subsequently, other muscle groups are added to the process. Finally, with practice, a greater level of relaxation is achieved in each of the muscle groups.

In a study by Johnson and Spielberger (1968), forty-eight psychiatric patients were found to significantly reduce their scores of A-state anxiety following PR training as measured by Spielberger's State Trait Anxiety Inventory. Trait anxiety was unaffected. Physiological measures of systolic blood pressure and heart rate were also significantly reduced. PR was the sole relaxation technique used. The results of this study indicate that PR is effective in lowering physiological measures of stress and state anxiety. It does not however, aid in lowering one's personality proneness to anxiety or trait anxiety. PR was found to reduce significantly heart rate in a study by Paul (1969). Hypnotic suggestion and PR were compared. PR was found to be significantly more effective in lowering resting heart rates. The lowering of resting heart rates was reinforced by Janda and Cash (1976). This study also demonstrated a correlation between the decrease in heart rate and a decrease in verbal stress as measured by a five point Likert scale. The subjects were ten students at Old Diminion University.

Curtis and Detert's Program:

A program developed by Curtis and Detert (1981), incorporates aspects of each of the previously

mentioned programs. It contains eight major categories: (1) sensory awareness, which is learning to identify stress in the body; (2) breathing rhythms or use of the exhalation phase to assist in relaxation; (3) mental imagery to enhance relaxation; (4) values clarification to help prioritize what is important in one's life; (5) total body relaxation which parallels progressive relaxation techniques explained earlier; (6) communication skills to help eliminate unnecessary stressors; (7) time management which would help make more effective use of time thereby reducing stress; and (8) physical exercise which is a natural release for tension.

Berna (1977) studied the effects of a workshop taught by Curtis at the University of Wisconsin - La Crosse utilizing the above principles. A five-day workshop was studied. The subjects were twenty participants matched with twenty-nine control subjects from an elementary education workshop. Anxiety levels were reduced, although not significantly. A-trait were significantly lowered over the post-posttest test period (two weeks). Weakness of this study include a short program (5 days), atypically initial A-trait scores (mean 41.45), and a small

sample (n = 29). A study conducted without these weaknesses could give a more accurate picture of this programs effectiveness.

No studies on the effectiveness of Curtis and Detert's program on adolescents could be found by this researcher. This researcher believes, however, that their program, appropriately adapted for adolescents, could be more effective than others due to the variety of relaxation techniques employed.

Summary:

Five relaxation programs were reviewed: Anxiety Management, Benson's Method, Biofeedback Training, Progressive Relaxation and Curtis and Detert's program. Brief summaries of the program were given and studies with implications for this research problem were presented. All the programs have been demonstrated to be successful within the confines of the studies mentioned. Components of each of these programs were utilized in this study with the main emphasis on Curtis and Detert's program.

Measurement Procedures in Stress Management

Measurement procedures in stress management can be divided into two categories; physiological measures and psychological measures. Physiological measures are those which reflect the bodily changes of the stress response. Psychological measures reflect anxiety or emotional changes which also occur during the stress response. This section will examine popular methods of both types of measures found in review of the literature.

Physiological Measures:

Physiological measurement of stress has generally been confined to pulse, blood pressure, muscle tension, galvanic skin resistance (GSR), and breathing movements. Heart rate responses have been the staple of research in physiological stress. It is easy to monitor indirectly by pulse rate and one of the easiest to learn to control (Brown, 1978).

Numerous studies utilized pulse rate for determining the effectiveness of relaxation programs (Dunbar, 1972, Blankstein, 1972, Johnson and Spielberger, 1968, Paul, 1969). In reviewing twenty three studies on the

effectiveness of relaxation programs, Allen (1977), listed sixteen as using cardiac activity, ten of which were pulse rate. Cardiovascular measures of heart rate (and indirectly pulse rate), and blood pressure are among the most sensitive indicators of stress and/or relaxation (Selye, 1976). Many researchers have utilized muscle tension and galvanic skin resistance in their measurements of stress. (Puente, Beiman, Doom and Young 1980, Blankstein 1972, Lang 1980, Allen 1980). Allen, 1980 found both pulse and frontalis muscle tension to be significantly lowered in a study of six hundred and fifty three undergraduates at the University of Maryland in response to a stress management program.

Psychological Measures:

Studies dealing with human stress have measured subjective stress levels through the use of standardized questionnaires and scales designed to assess one's personality response to life situations and environmental factors. (Allen, 1977). These measures are used to determine the level of psychological stress, but can also reflect or substantiate physiological changes.

Millimet's Manifest Anxiety - Defensiveness Scale (MAD) (1970) is a sixty-three item form for males and a fifty nine item form for females. This scale attempts to distinguish between how individuals defend themselves against anxiety (defensiveness) and the motivation for the anxiety (emotion). Sherrets (1979) utilized the MAD scale to determine anxiety levels of twenty seven college students in comparing them to perceptual tasks. This study conducted at the University of Nebraska yielded no conclusive findings.

Mandler, Mandler and Uviller (1958) developed the Autonomic Perception Questionnaire. This seven point scale has subjects relate the degree to which they perceive the effects of anxiety on several physiologic measures. These measures include cardiovascular activity, respiration, muscle tension and perspiration. In a study by Motiff (1980) 17 adult participants of a community education course in Michigan were shown to significantly reduce their scores on the Autonomic Perception Questionnaire as the result of a five week educational treatment. Puente, Beiman, Doom and Young (1980) in a study of three hundred and fifty nine psychology students at the University of Georgia, found a significant correlation between scores on the

Autonomic Perception Questionnaire and skin responsivity to stressful stimuli.

Thw two psychological measures most frequently used by stress researchers appear to be the Taylor Manifest Anxiety Scale (TMAS) and Spielberger's State-Trait Anxiety Inventory (STAI).

The TMAS was developed in 1950 by Janet Taylor. She utilyzed the Minnesota Multiphasic Personality Inventory to designate sixty five items judged to be indicative of manifest anxiety. Edie (1972), used the TMAS to measure the effect of an anxiety management program on college students. Allen (1980), used it to determine the effectiveness of an undergraduate service program. Both programs were found to have reduced scores on the TMAS.

The STAI and Spielberger's State Trait Anxiety Inventory for Children (STAIC) separate anxiety into state anxiety (A-state) and trait anxiety (A-trait). A-state indicates an individual's current level of anxiety. It is "right now" anxiety. A-state intensity is experienced as feelings of tension, apprehension, worry and heightened autonomic nervous system activity. A-trait reflects how prone an individual is to experience anxiety; that is, differences between individuals in the tendency to experience anxiety over

time. The STAIC is designed for use with middle to upper elementary students.

Johnson (1980) used the STAIC to measure anxiety reduction in chronically ill children after they had received training. The training program significantly reduced both A-state and A-trait scores. Lang (1980) used the STAIC to measure the effectiveness of a biofeedback program on the ability of eighteen eighth grade students and found no significant reduction in either A-state or A-trait. In a study by Berna (1977), the adult form of the survey was used to measure the effectiveness of a workshop taught by Curtis which employed the methods of Curtis and Detert (1981). A-state scores of the twenty college subjects were found to have decreased, though not significantly.

Researchers have used self reports of stress to measure subjective stress levels. Janda and Cash (1976), found that verbal reports of tension and relaxation corresponded to physiological changes of EMG and pulse rate in a study of ten college students. Motiff (1980), used self reports in a type of diary or journal form to determine how perceptions of stressors changed after a five week training program.

Social psychologists have studied conflict by examining styles of conflict resolution (Remer, 1982). Those researchers interested in conflict as a component of stress have generally relied on self report indices. Knutson (1979) developed a Likert-type scale to assess individual tolerance levels for conflict among three hundred and eighty four educators. Subjects were asked to indicate the extent of their agreement with twenty items. No significant findings were reported. Martin (1981) assessed levels of conflict among young mothers by having them record the frequency with which certain conflict situations occurred. Because of their subjective nature, self reports are not always solely reliable measures. However, they can provide added evidence to support other measures.

Summary:

Pulse rate, blood pressure, GSR and muscle tension are generally accepted measures in stress research. Besides physiological measures, standardized questionnaires are often used to measure stress. Self reports of stress/conflict are used to lend added evidence to other measures used in stress research.

CHAPTER III

METHODS

Introduction:

The problem of this study was to evaluate the effectiveness of a stress education program on the ability of eighth grade students to relax, and on the eighth grade students' perception of their own anxiety levels. Pulse rates were used to determine the physiological measure of their ability to relax. Self-reports of stress and conflict were used as psychological measures of ability to relax. The A-state component of Spielberger's State Trait Anxiety Inventory for Children (STAIC) was used to determine anxiety levels.

Subject Selection

Subjects selected for the study were eighth grade students from Mt. Horeb Middle School and Viroqua Middle School during the second semester of the 1983-1984 academic year. Eighth grade students from Mt. Horeb School served as the experimental group subjects. Eighth grade students from Viroqua Middle

School served as the control subjects.

Mt. Horeb Middle School was chosen for the experimental group because the researcher was the health educator there and this facilitated the implementation of the program. Viroqua Middle School was chosen as the control. The researcher had served as a student teacher at Viroqua in 1979 and was familiar with this system and its health educator. Geographically the schools were located within 90 miles of one another. The schools were matched on several important variables. Both schools had existing health classes in which to administer the tests. The eighth grade enrollment of Mt. Horeb was 119 for the 1983-84 school year. Viroqua's eighth grade enrollment was 115. Both middle school principals estimated their percentage of bus students to be near fifty. This is an indication of the strong rural background of each community. The median household income based on 1980 census figures was $15,000 for Viroqua and $16,651 for Mt. Horeb. Both communities share a strong Scandinavian heritage.

Educational Program Development

A three-week stress education program designed to enhance the ability of the subjects to relax was

developed by the researcher for use in the study. The program was integrated into the eighth grade health education curriculum at Mt. Horeb Middle School. Prior to the 1983-84 school year, five sections of health met four times per week. For the 1983-84 school year, curriculum changes by the administration allowed health to meet five sections, five times per week. Each section of health met an additional sixteen hours per semester, which allowed a three week program to be implemented. The addition of a unit on stress and relaxation skills was proposed by the researcher to the administration for the extra time. The administration was very supportive. The middle school principal served as curriculum coordinator, and he expressed to the investigator his concern about adolescent stress. He believed a stress management unit might help eighth graders deal with pressures of family conflicts, peer demands, boy-girl relations and biological changes. Program development was based on information from the review of literature and experiences with existing programs (Benson,1975; Curtis and Detert, 1981; Curtis, Detert and Schindler, 1983; Jacobson, 1983; Suinn and Richardson, 1971).

Much of the educational program was adapted from Curtis and Detert (1981). There are several important

reasons for this. First, the researcher participated in two workshops led by these authors at the University of Wisconsin - La Crosse, which provided familiarity with their techniques. Second, a strong point of these relaxation exercises was the practicality of their application. They are a combination of various relaxation programs with an emphasis on practice. Because of the age group being studied and the time and financial constraints, their methods were more desireable than alternative methods. The only biofeedback component was the use of temperature sensitive cards for use with several practice sessions. Third, the emphasis on practice and the variety of exercises used by Curtis and Detert (1981) appeared to make the topic more interesting to this age group.

The topic of stress and relaxation were divided into ten sessions of 46 minutes which included practice time for the relaxation techniques. An additional five practice sessions of 15 - 20 minutes were included. The ten sessions were spent on the following lessons; 1.) Pulse training (both experimental and control), 2.) What is stress? (2 sessions), 3.) Identify stress and stressors, 4.) Problems with stress, 5.) What is relaxation? (2 sessions), 6.) Benefits of relaxation, and 7.) Relaxation techniques

(2 sessions) (see Appendix E).

The researcher spent one lesson period with both the experimental and control groups teaching the pulse-taking technique to aid in uniformity. The discussion of what stress is (with the experimental group) was important to the program because it made students aware that the effects of stress can be beneficial, but that the effects of accumulated and uncontrolled stress can be hazardous. The lesson on identifying stress and stressors was included so students would recognize when and why they might be more susceptible to detrimental stress. The section on problems with stress was made a part of the educational program to point out the health-related problems of excessive stress. The physiological effects of relaxation were presented to differentiate between true relaxation and what might be called psychological diversions. The benefits of relaxation were outlined to motivate students to incorporate relaxation techniques into their lives. Finally, basic relaxation techniques were included which gave the students an opportunity to actually experience the psychological and physiological changes associated with relaxation (Appendix E).

Development of Instrumentation

The State Trait Anxiety Inventory for Children:

The State Trait Anxiety Inventory for Children (STAIC) as developed by Spielberger (1973) was chosen to collect data for this study and is presented in Appendix C. This instrument was chosen for several reasons. First, the STAIC consists of 20 statements on Anxiety-State, indicating the individual's current level of anxiety, and 20 statements on Anxiety-Trait, indicating how prone the individual is to experience anxiety. Null-hypotheses for the A-trait component were not formulated. The review of literature established that short stress management programs were not effective in altering A-trait (Lang, 1980; Johnson and Spielberger, 1968). Second, it is designed specifically for use with the age groups used in the study. Thus, readibility was insured. Third, responses were recorded by checking one of three possible answers which facilitated the completion of the test in a short amount of time.

Research on the reliability of the STAIC by Platzek, (1970), reveals a test-retest reliability of .31 for males and .47 for females. Low A-state

correlations were expected since valid measures of A-state would reflect differences in anxiety levels at the particular time of the testing. Because of the ever changing nature of anxiety levels, internal consistency may be more meaningful than test-retest correlations Spielberger, (1975). A-state alpha reliability was found to be .82 for males and .87 for females (Platzek, 1970).

Self Report of Stress, Self Report of Conflict:

Two other psychological measurements were used to measure ability to relax. They were self-reports of stress (SRS) levels and self report of conflict (SRC) levels. Subjects were told to rate their levels of stress and conflict on a five-point scale. One indicating a low level of SRS/SRC and five indicating a high level. These reports were taken each time the physiological measures of pulse rates were recorded. The SRS was developed to give insight as to the subjects perception of stress at each physiological measure (pulse rate). The SRC was developed in an effort to gain more information about the long term effect of the educational program on the subjects ability to deal with stressful situations.The SRS measured feelings of pressure, tension or worry the

subjects were experiencing at that moment. The SRC was to measure antagonism, and situations which caused ill feelings at home and school since the previous recording (Appendix B). The SRC was included as a measurement to investigate carry over effects of the stress management program in the subjects lives outside of the classromm. The SRS and SRC were included with the aid of the researchers thesis committee.

The scales were reviewed by two independent experts in the field of stress. Dr. Glenn Richardson and Dr. Sue Beall, stress researchers from Texas A and M University, were asked to evaluate the scale. Dr. Richardson did suggest that a seven point scale may have confused subjects due to the added complexity (Appendix B). They felt the scale was appropriate and could be an effective indicator. They did indicate that its effectiveness would be limited by the commitment of the subjects to record their readings. To increase subject commitment, the following procedures were incorporated; 1.) a test was given which counted as part of the experimental subjects grade. 2.) subjects were encouraged to keep their log sheets in a prominent place (Pulse Training, Handout-Log, Appendix E). 3.) Subjects in the experimental and control groups were reminded each day in class the day before

each reading was to be taken.

Resting Pulse Rate:

Pulse rates were chosen as physical measurements of relaxation for several reasons. First, the cardiovascular system is particularly sensitive to stress, and in this case, relaxation. Selye (1976) states that "stress, is usually associated with a rise in blood pressure and pulse rate". Second, resting pulse rates were practical in terms of measurement and recording. Eighth grade students were taught to take and record their own pulse to help in attaining uniformity. Finally, other physiological indicators such as blood pressure, skin temperature or muscle tension did not prove feasible in terms of cost, time and the number of subjects involved.

Experimental Procedures

A one day training session was administered to both the experimental and control groups. This training session was centered on teaching the subjects to take their own resting pulse rate accurately. The instruction included information on; where to locate the brachial and carotid arteries; normal resting pulse rates and what affects them; practice on measuring pulse rates; and use of log sheets to

record pulse (Appendix E). The same lesson plan was used by the researcher in Mt. Horeb and in Viroqua.

For ten days (prior to the treatment), at the same time each day, subjects in both the experimental and the control groups were asked to record their resting pulse rates, their SRS and SRC. This was done to achieve some base-line information on these three indicators. The control group was told that their recordings were to be used as part of a study on stress. The importance of accuracy and diligence were stressed.

An educational program consisting of ten 46-minute lessons, plus an additional five practice sessions of 10 - 15 minutes each, was given to the experimental group. The educational program spanned three weeks during which the same measures of pulse, SRS and SRC were taken at the beginning and at the end of each week for both groups. In addition, both groups took the STAIC on day one of the educational program and on the final session of the program. A final observation was made two weeks after the intervention. Resting pulse rates, SRS, SRC and the STAIC were taken as post-posttest measures. No contact was made between the researcher and the control subjects

during the pretest to post-posttest period. In summary, the control group received no treatment between the pre, post and post-posttest, and were involved in their regular health curriculum. The experimental group received an intervening educational program on stress management.

Statistical Treatment of Data

Four measures of stress were analyzed; pulse rates, self reports of stress (SRS), self reports of conflict (SRC), and A-state anxiety. Subject responses were recorded pre, post and post-post. A comparison of the change scores of the means of the experimental and control were analyzed. Only those subjects completing all three components (pretest, posttest and post-posttest) of each sub group were analyzed.

The Mann-Whitney U-test was chosen to analyze the measures of SRS, SRC and A-state Anxiety. The Mann-Whitney U-test is a nonparametrical method of statistical analysis designed to evaluate the difference between two means of independent samples (Champion, 1970). The test makes three assumptions:

(1) At least ordinal information is available.

(2) The samples are independent and randomly

drawn.

(3) The data is continuous.

The Mann-Whitney U-test is not bound by the same restrictions as its parametric counterpart, the t-test. The Mann-Whitney U-test doesn't require that the data be normally distributed or that the sample variances be equal. Seigel (1956) describes several advantages of the Mann-Witney U-test:

(1) It is a strong nonparametric test. According to Seigel (1956);

> If the Mann-Whitney test is applied to data which might properly be analyzed by the most powerful parametric test, the t-test, its power efficiency approaches $3/\pi = 95.5$ per cent as N increases, and is close to 95 per cent even for moderate size samples. It therefore is an excellent alternative to the t-test.

(2) It is appropriate with both large and small samples.

(3) Because it utilizes the rank value of each observation, it makes use of more information than just location with respect to the median.

The t test was chosen to analyze the pulse data. The t test is a parametric statistic that according to Champion (1970), makes the following assumptions:

(1) That interval-level data is available.

(2) The sample populations are normally

distributed.

(3) The variances of the populations from which the samples are drawn are the same.

The Mann-Whitney U-test was chosen to compare the change score values of the means of the experimental, (Group I) and control, (Group II):

(1) pretest to posttest

(2) pretest to post-posttest

(3) posttest to post-posttest

The measures of SRS, SRC, and A-state anxiety were compared in this manner. The .05 level was chosen to test for statistical significance.

Summary

119 eighth grade students from Mt. Horeb, WI were chosen to receive a stress education and relaxation program. 115 eighth grade students from Viroqua, WI were used as a control group. Ability to relax was measured physiologically using resting pulse rates, and psychologically using self-reports of stress and self-reports of conflict. The A-state component of the STAIC was used to determine the subjects' perception of their own anxiety.

CHAPTER IV

RESULTS and DISCUSSIONS

Introduction

The presentation of the statistical data and discussion are arranged according to the sequence of null-hypotheses presented in Chapter I. The .05 level of significance was established as the criterion for acceptance or rejection.

Some of the null-hypotheses tested used the z value. According to Mann and Whitney (1947), as n increases in size the sampling distribution of U rapidly approaches the normal distribution. That is, when n>20, one may determine the significance of an observed value of U by using the z score.

Ns were determined for each sub group by using only those subjects who completed all three recordings (pretest, posttest, post-posttest) for each individual measure. This was necessary as subjects were incomplete in consistently recording on the three measures of pulse, self reports of stress, and self reports of conflict.

Results

Null-Hypotheses Analyses:

For null-hypotheses one, two and three; n equaled 78 (experimental = 45, control = 33).

(1) The change score values of the mean pretest (baseline) pulse rates and the mean posttest pulse rates of the experimental (Group I) will not be significantly lower than those of the control (Group II). The t test yielded a non significant t value of -0.86, with p = 0.20. Thus, these data failed to reject this null-hypothesis. The pretest to posttest changes in pulse rates were not significantly lower in the experimental group.

(2) The change score values of the mean pretest pulse rates (baseline) and the mean post-posttest pulse rates of Group I will not be significantly lower then those of Group II. A t value of -1.29 was obtained with a p value of 0.1. This null-hypothesis failed to be rejected. The change in pulse rates pretest to post-posttest was not significantly lower in the experimental group.

(3) The change score values of the mean posttest pulse rates and the mean post posttest pulse rates of Group I will not be significantly lower than those of

Group II. The analysis of data revealed a t value of -0.62 and a p value of 0.27. Null-hypothesis number three failed to be rejected indicating no significant lowering of pulse rates posttest to post-posttest in the experimental group as compared to the control group.

For null-hypotheses four, five and six; n = 72 (experimental = 44, control = 28).

(4) The change score values of the mean pretest (baseline) self report of stress (SRS) and the mean posttest SRS of Group I will not be significantly lower than those of Group II. Statistical analysis using the Mann-Whitney U test resulted in a z value of 0.42 and a p value of 0.34. This null-hypothesis failed to be rejected. The change score of the SRS was not significantly lower in the experimental group pretest to posttest.

(5) The change score values of the mean pretest (baseline) SRS and the mean post-posttest SRS of Group I will not be significantly lower than those of Group II. Statistical analysis using the Mann-Whitney U test resulted in a z value of -0.85 with a p value of 0.20. Thus, these data failed to reject this null-hypothesis. These values indicated that the pretest to post-posttest change score values were not

significantly lower in the experimental group.

(6) The change score values of the mean posttest SRS and the mean post-posttest SRS of Group I will not be significantly lower than those of Group II. The Mann-Whitney U test yielded a z value of -1.21 and a p value of 0.11. Null-Hypothesis number six failed to be rejected indicating no significant decrease in the SRS posttest to post-posttest change score values of the experimental group.

(7) For null-hypotheses seven, eight and nine; n = 73 (experimental = 45, control = 28). The change score values of the mean pretest (baseline) self report of conflict (SRC) and the mean posttest SRC of Group I will not be significantly lower than those of Group II. Values obtained from the Mann-Whitney U test resulted in a z score of -0.24 and a p of 0.41. The null-hypothesis failed to be rejected. The SRC pretest to posttest change scores were not significantly lower in the experimental group.

(8) The change score values of the mean pretest (baseline) SRC and the mean post-posttest SRC of Group I will not be significantly lower than those of Group II. Statistical analysis using the Mann-Whitney U test resulted in a z value of -0.89 and a p value of 0.19. The failure of this null-hypothesis

to be rejected indicated that the SRC change score values pretest to post-posttest were not significantly lower in the experimental group.

(9) The change score values of the mean posttest SRC and the mean post-posttest SRC of Group I will not be significantly lower than those of Group II. A z value of -0.36 and a p value of 0.36 were obtained from the Mann-Whitney U. Thus these data failed to reject the null-hypothesis. The SRC change score values posttest to post-posttest were not significantly lower in the experimental group.

(10) For null-hypotheses ten, eleven and twelve; n = 169 (experimental = 100, control = 69). The change score values of the mean pretest (baseline) A-state and the mean posttest A-state of Group I will not be significantly lower than those of Group II. An analysis of data utilizing the Mann-Whitney U test, revealed a z value of -1.12 and a p value of 0.13. The null-hypothesis failed to be rejected. There was not a significantly lower change score pretest to posttest on A-state for the experimental group.

(11) The change score values of the mean pretest (baseline) A-state and the mean post-posttest A-state of Group I will not be significantly lower than those of Group II. Values obtained by the Mann-Whitney U

test resulted in a z score of -0.94 and a p of 0.17. This null-hypothesis failed to be rejected indicating no significant decrease in A-state, pretest to post-posttest, in the experimental group.

(12) The change score values of the mean post-test A-state and the mean post-posttest A-state of Group I will not be significantly lower than those of Group II. The Mann-Whitney U test yielded a z value of -2.08 and a p value of 0.02. The null-hypothesis was rejected. These values indicated that A-state was significantly lowered in the experimental group from posttest to post-posttest.

Discussion

Null-Hypotheses One, Two and Three (Pulse)

The mean change score values of the experimental group pulse rates were lower than the control group, though not statistically significant. The mean change score values are given for both groups in Table I.

It was felt by the investigator that pulse rates may have reached significantly lower levels had the educational treatment been longer. A three-week unit followed by short practice sessions each day for a semester rather than just a three week intervention may have been more effective.

Table I

Mean Change Score Pulse Values

Variable	Group	Subject	Mean Change
Pre to Post	1	45	-1.18
	2	33	0.60
Pre to Post-post	1	45	-2.25
	2	33	1.21
Post to Post-post	1	45	-1.06
	2	33	0.60

The low number of cases for each group was due to the fact that only those subjects with complete recordings (pre, post and post-post) were used. An increase in the number of subjects that could be counted may have effected the statistical outcome as well.

Null-Hypotheses Four, Five and Six (SRS)

The self-report of stress (SRS) was a five point Likert scale (see Appendix B). The researcher initially decided on five points because of its ease for this age group to understand and record. A recommendation by stress researcher, Dr. Richardson, of Texas A and M was to retain the five point scale rather than a seven (Appendix B).

It was Dr. Richardson's feeling that expanding the scale to seven points would have confused the subjects as to the meaning of the numbers.

Again, a low number of cases for the SRS may have influenced the statistical outcome. Many subjects could not be counted because of their failure to record post-posttest scores on not only the SRS, but pulse and self reports of conflict (SRC) as well.

The investigator felt that SRS may have been significant had the educational program been expanded. A three week unit may not have been long enough for eighth grade students perceptions of their own stress levels to change.

For Null-Hypotheses Seven, Eight and Nine (SRC).

Self reports of conflict (SRC) were measured by the same Likert scale as SRS (Appendix B). This may have posed a problem as it appeared to the researcher that subjects tended to respond similarly to SRS and SRC, not differentiating between them. A different type of scale for measuring conflict may have helped students make a clearer distinction.

SRC may also have been affected by the low number of cases and the relatively short length of the educational intervention. As in SRS and pulse, many

subjects failed to record their post-posttest readings.

For Null-Hypotheses ten, eleven and twelve (A-state).

The only significant result of this study was that A-state scores of the experimental group were lower than the control from posttest to post-posttest. This may have indicated that the educational program was successful in lowering state anxiety or anxiety at a particular point in time. Perhaps the large number of cases for A-state were able to record this change, whereas the lower number of cases for pulse, SRS and SRC could not.

The experimental group was encouraged to continue practicing various relaxation techniques on their own during the post to post-posttest period. The lowering of A-state may have been a result of continued practice of relaxation techniques.

Summary

The study yielded no significant results for pulse, self-reports of stress, and self-reports of conflict. A-state anxiety was significantly lower among the experimental group in the posttest to post-posttest period. A-state was not significantly lower in the pretest to posttest or pretest to post-posttest periods.

CHAPTER V

FINDING, CONCLUSIONS and RECOMMENDATIONS

Introduction

Health educators are beginning to focus attention on stress management programs for adolescents. Research on stress management programs with this age group has been very limited. It was the purpose of this study to assess the effectiveness of one such program on the ability of eighth grade students to relax. Four measures were analyzed; pulse, self-reports of stress (SRS), self-reports of conflict (SRC) and the A-state components of Spielberger's State-Trait Anxiety Inventory for Children (STAIC). Twelve null-hypotheses were posed for investigation by this study. The experimental group (Group I) consisted of students enrolled in an eighth grade health class at Mt. Horeb, Wisconsin, during the spring of 1984. The control group (Group II) consisted of students enrolled at Viroqua Middle School, Viroqua, Wisconsin, in an eighth grade health class during the same time period. Group I received a three week educational intervention, while Group II received no treatment. Pretest, posttest and post-posttest

comparisons were made on all four measures.

The statistical analysis of the SRS, SRC, and A-state were made by using the Mann-Whitney U-test. Pulse rates were analyzed by using the t test. The .05 level of significance was established as the criterion for rejection of null-hypotheses.

Findings

Findings based on the analysis of data are presented as they pertain to each of the null-hypotheses presented in Chapter I.

For null-hypotheses one, two and three; n = 78 (experimental = 45, control = 33).

(1) The educational program did not result in a significant lowering of pulse rates among Group I as compared to Group II during the pretest to post-test period.

(2) The educational program did not result in a significant lowering of pulse rates among Group I as compared to Group II during the pretest to post-post-test period.

(3) The educational program did not result in a significant lowering of pulse rates among Group I as compared to Group II during the posttest to post-posttest period.

For null-hypotheses four, five and six; n = 72 (experimental = 44, control = 28).

(4) No significant reduction of SRS scores were evidenced by Group I in the pretest to posttest period.

(5) No significant reduction of SRS scores were evidenced by Group I in the pretest to post-posttest period.

(6) No significant reduction of SRS scores were evidenced by Group I in the posttest to post-post-test period.

For null-hypotheses seven, eight and nine; n = 73 (experimental = 45, control = 28).

(7) Group I showed no significant reduction of SRC scores during the pretest to posttest period.

(8) Group I showed no significant reduction of SRC scores during the pretest to post-posttest period.

(9) Group I showed no significant reduction of SRC scores during the post to post-posttest period.

For null-phpotheses ten, eleven and twelve; n = 169 (experimental = 100, control = 69).

(10) A-state scores were not significantly reduced in Group I during the pretest to posttest period.

(11) A-state scores were not significantly reduced in Group I during the pretest to post-posttest

period.

(12) A-state scores were significantly reduced in Group I during the posttest to post-posttest period.

Conclusions

Based on the results of the research, the following conclusions were drawn.

Regarding null-hypotheses one, two and three: The three week educational program was not effective in significantly lowering pulse rates over any of the periods of time studied.

Regarding null-hypotheses four, five and six: The three week educational program was not effective in reducing SRS scores over any of the time periods studied.

Regarding null-hypotheses seven, eight and nine: The three week educational program was not effective in reducing SRC scores over any of the time periods studied.

Regarding null-hypotheses ten, eleven and twelve: The three week educational program was not effective in lowering A-state scores during the pretest to posttest or pretest to post-posttest periods. The program did appear to lower A-state scores of the experimental group during the posttest to

post-posttest periods.

Recommendations

Based on the results of this study, the following recommendations have been made:

(1) Research with adolescent stress management programs should allow more time for intervention. The investigator believes that a three-week unit is not of sufficient length to affect measures of relaxation. Elicitation of the "relavation response" requires practice (Benson, 1975). A three-week program may have provided too few opportunities for practice. A study with an educational unit plus additional practices over an entire semester or year would be of interest. Adolescents may need additional time to be able to influence sources of stress.

(2) Any future studies using similar recording procedures should have subjects record daily through the post to post-posttest periods (Appendix B). Only those subjects with pretest, posttest and post-posttest scores for each sub group measure were counted. Many subjects were not able to be incorporated because of their lack of a post-posttest score. The researcher feels that by having subjects continue to record their scores daily through the post to posttest periods that

many of the subjects would have continued the habit and would not have forgotten to take their post-post-test recordings.

(3) The Likert scales for self-report indices for stress and conflict appeared similar. The investigator feels that future studies may want to use separate types of scales to avoid subjects answering both scales with the same score. Perhaps a scale for conflict could be developed whereby subjects could identify a list of conflict situations and then record the frequency of their occurrance.

(4) As an educator, the researcher suggests that the study of adolescent stress needs to continue. Although few significant changes could be identified as a result of this stress management program, the researcher was encouraged by the response of the students to the treatment. The success or failure of an educational experience can not always be measured by numbers. If the lives of even a small number of students were influenced in a positive manner, then stress management as a part of the school curriculum is warranted.

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APPENDIX A

STUDY TIMELINE

1984

Thursday, Feb. 2,	Study outlined to Mt. Horeb (experimental) subjects.
Friday, Feb. 3,	Study outlined to Viroqua (control) subjects.
Saturday, Feb. 4-Monday, Feb. 13,	Baseline data collected experimental and control.
Monday, Feb. 13,	Pretest measures taken on pulse, self-reports of stress and conflict (SRS), (SRC) and state anxiety (A-state), experimental and control.
Monday, Feb. 13-Friday, Mar. 2,	Educational program, experimental group (see appendix E).
Friday, Mar. 2,	Posttest measures of pulse, SRS, SRC, and A-state recorded (experimental and control).
Friday, Mar. 16,	Post-posttest measures of pulse, SRS, SRC, and A-state recorded for experimental and control.

APPENDIX B

DEVELOPMENT OF SELF-REPORT AND PULSE MEASURES

Introduction

A five-point Likert scale was developed by the researcher to measure self-reports of stress and self-reports of conflict. The scale was chosen in an attempt to meet the following criteria:

1.) Ease of understanding.

2.) Ease in recording.

3.) Validity as an instrument.

The researcher sent a cover letter, and copies of the educational program outline and log sheet (which contained both scales) to stress researchers Dr. Sue Beall and Dr. Glenn Richardson for critiquing. The cover letter, educational program outline, log sheet and Dr. Beall's and Dr. Richardson's comments are presented here.

Mount Horeb Area Schools

MIDDLE SCHOOL

MOUNT HOREB, WISCONSIN 53572

December 2, 1983

I have read an article of your study "The Efficacy of a Three-Week Stress Management Unit for High School Students". This is important research and your study was very impressive. If your time and generosity permits, I am hoping you will be able to help me in a similar study.

I am a graduate student at the University of Wisconsin-LaCrosse in School Health Education. I am conducting my Masters research in the area of stress management. Currently, I am teaching seventh and eighth grade health at the Mt. Horeb Middle School, Mt. Horeb, WI. My intentions are to study the effectiveness of a stress management unit on the ability of eighth grade students to relax and on their own perceptions of anxiety. The study will be conducted in February. I plan to use heart rate as the physiological measure. Anxiety levels will be measured using Spielberger's State-Trait Anxiety Inventory for Children (STAIC) and self reports of stress and conflict. Both the experimental and control groups will consist of about 120 students.

I would very much appreciate your input on two matters. One, I would like your thoughts on how effective you feel the attached log system will be. Specifically, there are three questions on the back of the log I would like you to answer. Second, I would welcome any thoughts or suggestions you would have to improve my study.

I appreciate any help you are able to give me. I will send my results to you if you are interested (target date, Sept. 1984). I look forward to hearing from you.

Sincerely,

LARRY PAPENFUSS
Health Educator
Mt. Horeb Middle School
Mt. Horeb, WI. 53572
phone 608-437-3031

Tenative Lesson Plan Outline

Topics	Exercises
lse Training - locations of the carotid and brachial arteries - demonstration of technique - discussion of "normal" rates - factors affecting pulse - explaination of logging procedures	- practice proper technique - take a second reading after brief exercise - take a third reading after recovery (have students share their readings with the class to identify extremes).
at is Stress (2 lessons) - definition of stress - the fight or flight response - physiological changes that occur with stress - Selye's GAS - positive aspects of stress	- fist clench, #1 * - breathing exercise, #4 * - exhalation " , #5 "
entifying Stress and Stressors - definitions of stressors - examples of adolescent stressors	- Holmes, Rahe Scale - supporting environment, #8 *
oblems with Stress - physiological effects of stress - stress gone bad - health related problems w stress	- researcher led relaxation technique
at is Relaxation (2 lessons) - feelings associated w the relaxed state - mind over body - excerpt from Anatomy of an Illness	- Chevreul's Pendulum * - practice w Coachman's position or knee support position *
nefits of Relaxation - physiological effects of relaxation	- Benson's method, #19 *
laxation Techniques (2 lessons) - Biofeedback, Meditation, Exercise, Progressive, Mental Imagery and Concentration	- long breath, #25 * - Total Body Relaxation, #17 *
ve Additional Practice Sessions - Biofeedback Temp. Cards * - Individual Technique - Relaxation Tape	- Ganzfeld effect - researcher led relaxation technique

Exercises taken from How to Relax, Curtis and Detert, 1981.

8th Grade Health - Personal Log Name _____ Section _____

I understand that it is important to take my pulse at the same time each day in the same location (neck or wrist). Preferably, the readings should be taken in the morning before you come to school. It is just as important not to make up an imaginary reading should I forget to take a reading. I will also record my levels of stress and conflict at the same time of day using the scale below. I will record an NR for any forgotten reading.

Stress can be defined as feelings of pressure, tension or worry you feel right at this moment.

Conflict can be defined as any arguments or situations which cause bad feelings either at school or at home since your last recording.

Here is the scale you should use to measure your levels of stress and conflict.

1	2	3	4	5
I feel little or no stress/ conflict	I feel mild stress/ conflict	I feel average stress/conflict	I feel above average stress/ conflict	I feel extreme stress/conflict

I agree to take my pulse at the same time each day. I will take it at _____ a.m. on each of the following mornings. Use the chart below to make your recordings.

Date															
Pulse for 15 seconds															
	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4	x 4
Pulse for 1 minute															
Level of Stress															

I am attempting to measure <u>conflict</u> to determine a slightly more long-term effect of the stess management program. Do you feel this is appropriate?

Comments:

Do you feel the scale of 1 -- 5 will be an accurate measure?

Comments:

Do you feel the scale of 1 - 5 will be an accurate measure of stress?

Comments:

Please feel free to make any additional comments which you feel would improve my recording system and/or study.

THANK YOU VERY MUCH FOR YOUR HELP,

COMMENTS - DR. BEALL

As I read the log I felt that it should be a good method of recording both stress levels and levels of conflict.

It might be a good idea to select a small group of students from 8th grade to do the following:

1. Make a list of conflicting situations in which they are most often involved.
2. Ask them for 1 week prior to using the log to write down when they have conflicting experiences.
3. During the two weeks they are all keeping their logs those (2) experimental groups will take their pulse, (stress & conflict levels) immediately following a conflicting experience in addition to their early morning recording.

An analysis of Variance between post conflict responses and early morning responses would indicate the range of stress, conflict and pulse rates for each person.

A change (lessened degree of) any of the 3 parameters would indicate that the treatment (practicing relaxation) was changing the student's ability to handle stress and conflict.

The research depends on the committment of your students to keep the log.

TEXAS A&M UNIVERSITY
COLLEGE OF EDUCATION
COLLEGE STATION, TEXAS 77843-4243

Department of
HEALTH AND PHYSICAL EDUCATION
(713) 845-3109

February 6, 1984

Larry Papenfuss
Mount Horeb Middle School
207 Academy Street
Mt. Horeb, Wisconsin 53572

Dear Larry,

Let me first apologize for the delay in responding to your letter of inquiry, but it seems it was put on the back burner during finals weeks and again getting the semester started. I think you have a good study and I will be interested in the results. You can consider the following comments:

1. I believe the Holmes-Rahe scale for Adaptive Stress (life events) for adolescents is inappropriate. I have included the Youth Adaptation Rating Scale for your consideration.

2. Although a weak research tool because of the margin of error in collecting data, the log does seem appropriate and the emphasis on the behavioral is worth the risk.

3. I think the 1-5 scale is appropriate for conflict. A 1-7 scale would prove to be more inaccurate because of interpretation of what the numbers meant.

4. I'm not sure conflict is a long range effect of stress. The conflict is a stressor that comes and goes with other types of stressors. Perceptually, people will respond to conflict either by major physiological arousal (stress response) or with a mild response. Your heart rate will pick this up maybe - I think only at the time of the conflict or if they are contemplating the conflict.

Good luck with your study. Let me know if you would like further comments.

With regards,

Glenn E. Richardson, Ph.D.
Coordinator, Allied Health Studies

GER/df

Enclosures

APPENDIX C

HOW-I-FEEL QUESTIONNAIRE

Developed by C.D. Spielberger, C.D. Edwards, J. Montuori and R. Lsuhene
STAIC FORM C-1

NAME_____AGE_____DATE_____

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and decide how you feel right now. Then put an X on the line in front of the word or phrase which best describes how you feel. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, find the word or phrase which best describes how you feel right now, at this very moment.

1. I feel ...	___ very calm	___ calm	___ not calm
2. I feel ...	___ very upset	___ upset	___ not upset
3. I feel ...	___ very pleasant	___ pleasant	___ not pleasant
4. I feel ...	___ very nervous	___ nervous	___ not nervous
5. I feel ...	___ very jittery	___ jittery	___ not jittery
6. I feel ...	___ very rested	___ rested	___ not rested
7. I feel ...	___ very scared	___ scared	___ not scared
8. I feel ...	___ very relaxed	___ relaxed	___ not relaxed
9. I feel ...	___ very worried	___ worried	___ not worried
10. I feel ...	___ very satisfied	___ satisfied	___ not satisfied
11. I feel ...	___ very frightened	___ frightened	___ not frightened
12. I feel ...	___ very happy	___ Happy	___ not happy
13. I feel ...	___ very sure	___ sure	___ not sure
14. I feel ...	___ very good	___ good	___ not good
15. I feel ...	___ very troubled	___ troubled	___ not troubled
16. I feel ...	___ very bothered	___ bothered	___ not bothered
17. I feel ...	___ very nice	___ nice	___ not nice
18. I feel ...	___ very terrified	___ terrified	___ not terrified
19. I feel ...	___ very mixed-up	___ mixed-up	___ not mixed-up
20. I feel ...	___ very cheerful	___ cheerful	___ not cheerful

APPENDIX D

SUBJECT CONSENT LETTERS

V I R O Q U A M I D D L E S C H O O L

January 25, 1984

Dear Parent:

In Feb. of this year, a graduate student from the University of Wisconsin - La Crosse would like to have all Viroqua eighth grade students serve as subjects for a study on stress. Mr. Larry Papenfuss is the researcher. He formerly did his student teaching here under Wes Mack. Mr. Mack will be in charge of the study here in Viroqua. Mr. Papenfuss is in his fifth year as a health educator in Mt. Horeb, WI.

The study simply asks that the eighth grade students do two things. One, that they record their pulse rates each morning before school in a log. Second, that they take three surveys designed to measure the amount of stress they are feeling. Names of the students will not be used. Their individual logs will be as confidential as the student would like them to be. It is simply the numerical findings that will be of interest. Because these findings will be part of a thesis, the University of Wisconsin - La Crosse requests that you give consent for your son/daughter to participate. This is a formality required by the institution.

Teenagers, like adults, are subjected to many kinds of pressures. It is hoped that studies like this will help find ways that students can successfully cope with their stress. You can help by allowing your son/daughter to be a part of this study. Your help will be greatly appreciated. If you have any questions or concerns, feel free to contact Mr. Wes Mack. Thank you for your help.

Wes Mack
Health Educator
Viroqua Middle School
Viroqua, WI 54665
Phone 637-2420

JERRY SINES, Principal

Larry Papenfuss
Health Educator
Mt. Horeb Middle School
Mt. Horeb, WI 53572
Phone 437-3031

PHIL HALVERSON, Principal

M T . H O R E B M I D D L E S C H O O L

JANUARY 25, 1984

Dear Parent:

My name is Larry Papenfuss and I have taught 7th and 8th grade health in Mt. Horeb for the last 5 years. I am currently working on my Masters degree in Health Education through the University of Wisconsin-LaCrosse. In February of this year, I plan to involve my 8th grade classes in studying stress control. Stress management skills have been a part of the 8th grade curriculum for the past two years so there will be little change in what the students will be taught. The difference comes, in that I will be attempting to measure how effective the unit is on helping students to deal with their stress. I will be asking them to record their pulse rate before coming to school during a three week period. They will also complete a short questionnaire which is designed to measure how much stress they feel.

The only danger in this unit may be for someone who has serious heart trouble. This is because relaxation techniques will change the heart rate. Other then this, there is no danger of physical or psychological harm. The names of students will not be used. It is simply the numerical findings that will be of interest. Because these findings will be a part of my masters thesis, I need your consent for your son/daughter to participate. This is a formality required by the institution from which I am getting my degree.

Teenagers, like adults, are subjected to many kinds of pressures. It is hoped that studies like this will help find ways that students can successfully cope with their stress. You can help by allowing your son/daughter to be a part of this study. Your help will be greatly appreciated. If you have any questions or concerns feel free to contact me. Thank you for your help.

Larry Papenfuss
Health Educator
Mt. Horeb Middle School
Mt. Horeb, WI. 53572
Phone 437-3031

PHIL HALVERSON, Principal

I agree to allow my son/daughter to participate.
Please indicate if your son/daughter has any serious conditions which might be a problem.

Student Name

Parent Signature of Consent

APPENDIX E

EDUCATIONAL PROGRAM

Introduction

This appendix presents the educational program consisting of;

1.) Pulse training (given to experimental and control).

2.) Ten 46-minute lesson plans.

3.) Five 15-20 minute lesson plans.

4.) Handouts and references used in the program.

Pulse Training

Instructional Objectives

(1) To explain the role of the subjects as a part of this study.

(2) To familiarize the subjects with the proper techniques in locating and measuring pulse rates.

(3) To explain the terms stress and conflict.

(4) To explain the procedure for recording their observations on the log sheet.

Student/Lecture Notes

Explain the study. Stress the importance of their cooperation, honesty and accuracy. Show locations of the carotid and brachial artery (wrist and neck). Discuss "normal" rates and factors which can influence pulse.

Activity

Practice proper pulse taking technique, encouraging students to try all four locations (both wrists and both sides of neck), to determine which may be easier for them. Have students share their readings with the class to identify extremes and possible problems in measuring.

Have students jog in place for two ~~minutes and re-~~ take their pulse to demonstrate fluctuations and to practice measuring. Continue by having students check their pulse each minute until they have recovered to their beginning pulse or close to it.

Handout - Log

Explain when and how to record readings. Stress the importance of taking the readings at the same time each day and at the same location. Suggest that the log be kept by their alarm clock, on the bathroom

mirror, or on the refrigerator (place where they will be reminded each day). Define what is meant by the terms of stress and conflict on the log sheet. Stress as feelings of pressure, tension or worry at the present time. Conflict is any arguments or situations which cause bad feelings either at home or at school since your last recording.

Day One

Instructional Objectives

(1) To introduce some of the basic concepts of stress.

(2) To brainstorm some common coping techniques.

(3) To read "Experts Highlight Stress Basics" AAL Kit.

Student/Lecture Notes

Define stress as a normal reaction of the body that prepares one to meet the demands placed on it. Identify some of the body responses to stress. The stress response was defined as the reaction of the body to a perceived danger whether it is real or imagined. If it is real, the response helps the person to either fight the danger or run away. If the threat is imagined, the body is physiologically primed for action, but then no action takes place. Stressor is defined

as the source or cause of the stress. Explain Selye's General Adaptation Syndrome.

During the lecture the investigator picked out one student which he purposely startled by shouting and slapping their desk to demonstrate some of the physiological effects of stress.

Brainstorm ways students cope with stress (sleep, exercise, reading, music etc.). Suggest following coping methods;

* (1) Organize yourself
(2) Change your environment
(3) Build up strength
(4) Listen to your body
(5) Find ways to laugh each day
(6) Develope friendships
(7) Learn to relax

Activity

* Read article "Experts Highlight Stress Basics" (from The Stress Examiner, The Stress Kit, Aid Association for Lutherans, Appleton, WI 54919, 1983).

Day Two

Instructional Objectives

(1) To make students aware of the feelings associated with stress and relaxation.

(2) To demonstrate the importance of proper breathing technique in relaxation exercises.

(3) To demonstrate the importance of concentration in relaxation exercises.

Student/Lecture Notes

Review day one lseeon. Notes on feelings associated with inhalations; invigoration, tension, dryness, coolness and expanding. Notes on feelings associated with exhalations; heaviness, warmth, sinking, relief, relaxing, and calm (Curtis and Detert, 1981, p. 83, 85).

Activity

Sensory awareness - Fist Clench Avtivity as described in Learn to Relax, Curtis and Detert, 1981, p. 74-75. Inhalation and Exhalation exercises as described in Learn to Relax, Curtis and Detert, 1981, p. 84-86.

Day Three

Instructional Objectives

(1) To define stressor.
(2) To brainstorm common adolescent stressors.

Lecture Notes

Stressor is defined as the source or cause of the stress. Discuss different types of stressors with examples.

Activities

Brainstorm adolescent stressors and list on chalk board. Assignment: "What Bugs Me" worksheet.

Day Four

Objectives

(1) To review common adolescent stressors.
(2) To discuss the difference between "distress and "eustress".
(3) To discuss the "Basics of Relaxation".

Lecture Notes

Eustress is defined as good stress or stress that helps one to perform better. Distress is defined as stress gone bad. Distress is caused by the stress response being set off over an extended period of time or for inappropriate reasons (Selye, 1974).

The Basics of Relaxation are defined as;

(1) A Quiet Environment.
(2) A Comfortable Position.
(3) Concentration on Selected Exercises.
(4) A Passive Attitude (Curtis and Detert, 1981, p. 63).

Discuss the importance of the Basics of Relaxation when attempting relaxation techniques.

Activity

Supporting Environment Activity (Curtis and Detert, 1981, p. 92).

Day Five

Instructional Objectives

(1) To explain the bodies physiological response to stress.
(2) To discuss the problems associated with distress.

Student/Lecture Notes

Recall Day One when a student was frightened by the researcher and discuss body changes such as; increased heart rate, increased respirtory rate, increased perspiration, increased muscular tension and an overall increase in body metabolism (Curtis and Detert, 1981, p. 21).

Discuss the research of Holmes and Rahe (1967) in relation to stressful events and disease.

List those stress related disorders discussed in the article on the chalk board (tension headaches, change in eating habits, high blood pressure, stomach problems, heart disease, muscle pain, mood changes, fatigue).

Activities

Read article "Stress Can Make You Sick" (Current Health Magazine, Jan., 1983, p. 22-23).

Day Six

Instructional Objectives

(1) To demonstrate the mind-body connection.
(2) To define relaxation.

Student/Lecture Notes

Discuss the mind's ability to control the body. Open discussion of placebos, faith healers etc.. Offer a possible explanation in the form of the power of the mind. Demonstrate Chevruel's pendulum. Have students do the activity in groups of four. Discussion/explanation. Emphasize the minds ability to effect change on bodily functions.

Activities

Chevruel's Pendulum (Curtis and Detert, 1981, p. 135-136). * Researcher lead relaxation technique (Script described later this appendix).

Day Seven

Instructional Objectives

(1) To define relaxation.
(2) Review Basics of Relaxation

Lecture Notes

Relaxation is defined as the opposite of the

stress response. It causes the physiologic changes of decrease in heart rate, lower metabolism, decreased breathing rate, and a restoring of a healthier balance (Benson, 1975). It is different from sleep or other diversions. It is a skill or group of skills which one utilizes to bring about the changes which comprise the relaxation response. Review basics of relaxation;

1). Quiet environment.
2). Comfortable position.
3). Concentration.
4). Passive Attitude.

Discuss the importance of these in practicing relaxation techniques.

Axtivity

Researcher Relaxation Technique using Coachman's position or knee support position (Curtis and Detert, 1981, p. 67,69,70).

Day Eight

Instructional Objectives

(1) To discuss the benefits and physiological effects of relaxation.

Student/Lecture Notes

Benfits;

1.) Less anxious.
2.) Able to put stress in perspective.
3.) Reduce negative coping devices such as alcohol and tobacco use.
4.) Improve sleep onset.
5.) Reduce frequency and intensity of stress-related problems.

Physiological Effects;

1.) Decrease heart rate.
2.) Decrease breathing rate.
3.) Decrease muscle tension.
4.) Overall lowering of body metabolism.

Activities

Benson's Method # 19 (Curtis and Detert, 1981, p. 123).

Day Nine

Instructional Objectives

(1) To introduce the variety of relaxation techniques available.

Student/Lecture Notes

Relaxation Techniques;

(1). Biofeedback - the use of a sensing instrument to alter a specific body function such as blood pressure.
(2). Meditation - techniques which specifically focus attention to the elimination of other disruptive thoughts.
(3). Progressive Relaxation - muscle groups are relaxed more and more with each

practice, muscle groups are added to attain total muscle relaxation.

(4). Benson's Method - a method developed by Herbert Benson that uses the "Basics of Relaxation" and properties of meditation to elicit relaxation.

(5). Exercise - helps to reduce the stress response by the amount of adrenal hormone released.

Activities;

Long Breath #25 (Curtis and Detert, 1981, p. 139).

Day Ten

Instructional Objectives

(1). To practice a relaxation technique.
(2). To complete unit test on stress and relaxation (test is included at end of Appendix E).

Activities

(1). Total Body Relaxation (Curtis and Detert, 1981, p. 114-116).

Days eleven through fifteen were 15-20 minute practice sessions. The remainder of the period was spent on individual reports on topics related to wellness.

Day Eleven

Researcher lead techinque with biofeedback cards.

Day Twelve

Relaxation to soothing music chosen by students. The following stipulations were made by the researcher;

1). Only instrumentals (no vocals).
2). Easy listening (no rock-n-roll).
3). Played softly.

Day Thirteen

Researcher lead technique.

Day Fourteen

Student's individual technique (each student uses principles from class to formulate their own relaxation techniques.

Day Fifteen

Researcher lead technique with biofeedback cards.

Script for Researcher Lead Relaxation Technique

We would like to begin by having everyone assume a comfortable position. When you feel comfortable, I would like everyone to close their eyes and keep them closed for the remainder of the activity. I would like you to turn your attention to your breathing ... notice the air flowing in and out of your mouth and nose. Now take a deep breath, hold it, and let it out slowly. Take a second deep breath, hold it, and let it out slowly. Turn your attention to your exhalations. Feel, sense, and experience the air as it leaves your mouth and nose. As you exhale, feel your body relax. Exhale and relax. Exhale and relax. For the next several breathing cycles, as you exhale, allow yourself to become more and more relaxed (pause). As you exhale allow your body to sink, exhale and sink, exhale and float. Feel your body melt into the supporting environment. Feel, sense and experience a comfortable warmth in the muscles of your body. As you exhale enjoy the warmth and heaviness in the muscles of you body.

For the next several breathing cycles, allow

yourself to enjoy the peace and calm, and relaxation in the muscles of the body (Pause). When you feel comfortable allow yourself two or three more breathing cycles, then open your eyes, stretch, flex and take a deep breath.

This exercise can take anywhere from five to fifteen minutes. Pauses can be lengthened or key phrases repeated.

Expert highlights stress basics

Stress is something most of us try to avoid. But at least one expert in the field says some stress can actually be good for us.

"We need stress," says Don Tubesing. "Without it, we'd lack the energy and enthusiasm that pushes us to grow and learn. The trick is establishing a healthy level of stress and maintaining that level."

Tubesing is president of Whole Person Associates, a publishing and consultation firm in Duluth that provides services to businesses and helping professions.

While some stress is good, Tubesing cautions that too much stress can be dangerous to health — even fatal. He explains that it's important to know how to cope with excess stress that can pile up and threaten your healthy stress level.

Stress: a physical reaction

"Stress is not pressure from the outside, as some people think," says Tubesing. "Stress is the physical reaction within your body that prepares you to meet that pressure — and to fight back. Any pressure that triggers the stress response is a stressor."

For example, a husband may be waiting for his wife who is late coming home from work. He may say to himself that she's probably late because she's working late or doing errands she couldn't get done earlier. Those reactions are positive and will produce little or no stress.

However, if his reaction is worry or anger, he will undoubtedly be stressed. And if the wife walks in the door with a perfectly understandable reason for being late, the husband will stand there stirred up and prepared for the worst.

According to Tubesing, we all continually face many similar stressors. When these stressors threaten us, our bodies rush to protect us by turning on the chemical juices and preparing to defend us. The fight reaction that results is stress.

Three stages of stress

Dr. Hans Selye, known as the "father of stress" for his extensive work and research on the subject, has identified three stages of stress. The first stage is alarm, in which the body gears up for a fight. The heart beats faster, blood pressure rises, digestion slows down and adrenalin produces a sudden burst of energy.

The second stage is adaptation. This is the negotiation phase when the person works through the crisis. When this is done successfully, the body can slow down, relax and return to normal.

If relaxation doesn't occur after the alarm stage, the body remains physically geared up and moves into the third stage, exhaustion.

In this stage, if the body isn't given the chance to recover and rid itself of harmful by-products, an imbalance occurs. Over time, resistance is lowered and illness is likely.

Choosing coping techniques

"Because stress is an inevitable part of life," Tubesing says, "it makes sense to develop coping techniques that work. Everyone should have a variety of coping techniques. There are many — from the practical to the creative avant-garde."

Following are some of the basic, common sense techniques he suggests.

and energy.

Change your environment. Cont what and who is surrounding you to rid of stressors and gain support yourself.

Build up your strength. If you're good physical condition, you'll better able to stand up against y stressors.

Listen to your body. It will let you kn when you're pushing too hard. Wh that stomach sours or head aches, sl down and enjoy life.

Find ways to laugh each day. Laugh is one of the most pure and total relea of tension.

Develop a supportive network of car people around you. Research indica that if you do, you'll live longer and healthier.

Learn to relax. Use relaxati techniques for 20 minutes each d You'll be prepared for clearer think and decision-making.

Nurture your faith. *A faith you can r on in time of crisis must be a central pa of your daily living. A strong relatio*

Health - 8th Grade - STRESS MANAGEMENT

Name _____ Section 97

What Bugs Me

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

Circle ○ the 3 that bug you most.
Square □ those which have bugged you today.
List 5 signs or hints which tell you that you are feeling too mu
stress.

1. _____
2. _____
3. _____
4. _____
5. _____

What I Do To Cope

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

cle ○ the 3 you use most.
are □ those you've used today. (in the last 24 hours).

_____ bugs me right now.

I'm going to cope with it by _____

STRESS
Can Make You Sick

"Rob, if you don't calm down you are going to make yourself sick!"

"Don't be silly, Mom, I'm fine."

"Then how come you have so many headaches, your acne has flared up, and you're taking diarrhea medicine like it's soda pop?"

"That has nothing to do with studying for final exams. I've had those same problems off and on for years."

Is stress really getting to this young man or is it just a coincidence that some physical problems are cropping up at a time when he is under pressure? The symptoms he is experiencing could all be related to stress. So can a lot of other symptoms. Consider the box on the opposite page. Do you find it hard to believe that every one of these disorders can be related to stress? Certainly many of these problems can have other causes. But any one of them could be caused by stress.

Understanding the Stress Response

Stress is a force that comes into your life and can upset normal physical, mental, and emotional balance. The sources of stress may not be negative things. Your body reacts the same way whether you are excited about a date or nervous about a job interview. Any time you are under stress you experience the *stress response*. This is a coordinated set of nervous system actions that puts you into high gear whenever you feel threatened or excited. You can actually feel some of these responses, such as increased heart rate, rapid breathing, sweating, and "butterflies" in your stomach.

All of these responses are chemically produced by a substance called *adrenalin*, which is shot out of your adrenal glands on a signal from the brain. When this happens, you are ready for an all-out reaction, known as the fight-or-flight response, in which you either retreat entirely from the stress-causing event or are ready to meet it head on.

But what if you can't do either? Then the chemicals are not used up and you stay in high gear longer than you should. Rob, for example, has exams coming up in one week. He can't run away from them and he can't take them early, so his body stays "on alert" for a week. The result may be muscle tension in the back of his neck leading to fatigue or headaches. Stress also may be interfering with the normal action of his colon and causing the diarrhea. And although tension does not cause pimples, it can make breakouts worse by altering hormone balances.

The Dangers

Though Rob's stress symptoms are annoying, they probably are not dangerous. However, some stress-related illnesses are actually life-threatening. In 1974, Dr. Meyer Friedman found that some men who had experienced heart attacks were unusually ambitious, competitive, and hurried individuals. He called them Type As. By contrast, other men with much lower rates of heart disease seemed more relaxed. He called them Type Bs. Over the next eight and a half years he studied 3,000 healthy men and classified them into Type A or B. His study confirmed that Type As were more than twice as likely to suffer heart attacks as Type Bs, even when other risk factors, like smoking, were controlled. This suggested that the way we handle stress may influence such things as hypertension, irregularities in heartbeat, and even cardiovascular disease.

Further evidence on the dangers of stress comes from studies of people in high-tension jobs, such as air-traffic controllers. A three-year study of 416 air-traffic controllers found them two to three times as likely to develop hypertension as workers in other occupations. As with the Type A individuals, chronic stress (sustained over long periods of time) seems to be the most damaging. Often people under stress adopt habits to help them cope. Some of these habits, like regular exercise, are very helpful. But others, like smoking and alcohol consumption, are counterproductive. It

becomes a vicious circle. People smoke because they are under stress, but the stimulant in nicotine produces even more stress.

Stress-related Ailments

How can stress produce headaches? Part of the stress response involves muscle tension and the constriction of blood vessels. Both actions serve the purpose of increasing oxygen delivery, which in turn increases energy to prepare the body for explosive movement. But when the stress is psychological, muscles automatically tense but are not released. Tension headache is often the result. Described physiologically, headaches are caused when the contracted muscles in the back of the neck cut off the supply of oxygen to muscle cells. These muscles then release chemicals that transmit to the brain, giving warning signs of pain. The pain of a tension headache has been described as dull rather than stabbing or pulsating.

One relatively quick solution to tension headaches is to lie down and rest, to give the body a chance to unwind taut muscles. Analgesics, like aspirin, don't get to the basic problem. They are likely to give only temporary relief, if any.

Stress can be related to gastrointestinal problems too. Out of the five major gastrointestinal complaints—irritable bowel syndrome, ulcers, gall bladder problems, inflammation of the esophagus, and heartburn—the only one that is not related to stress is gall bladder problems. There are a few basic reasons for the relationship between stress and the other four. When the stress response occurs, it causes two things to happen in the digestive tract almost simultaneously. First, there is an increase in the secretion of acids, both in the stomach and small intestine, and secondly, spasms in the muscle walls develop. The spasms may trap food in one area or push it through too fast. The elevated acids can begin to break down the lining of the digestive tract, causing an ulcer, or may be pushed from the stomach back into the unprotected esophagus, causing heartburn.

Another outcome may be constipation or diarrhea, accompanied by painful abdominal cramps. These symptoms may also affect appetite. Some ulcer sufferers will eat more because the pain is less when the stomach is full. Others will eat less because the acid level drops when the stomach is empty. Almost all will exhibit some amount of irritability due to discomfort.

Stress can also produce changes in mood and even in the cycles of the body. Both men and women may experience emotional reactions, such as temper outbursts, fearfulness, crying, loss of concentration, impulsiveness, depression, and nightmares, when under stress.

The list of stress-related illnesses is growing. Some believe that stress lowers immunity to disease. Studies in factories and hospitals have shown that a high level of stress can make a person accident-prone—perhaps by interfering with concentration.

The mind-body link appears to be far stronger than we ever imagined. The so-called psychosomatic illnesses can't be ignored, because their symptoms are real.

Stress Vs. Distress

Research is now focusing on how we can handle stress, since we cannot and would not want to eliminate it. Stress can be the spice of life. It can challenge us and keep life exciting. Studies are showing that some people thrive on stress and do not experience illness. What makes the difference? A few clues are emerging.

Exercise is a good release for stress and those who tolerate stress well often exercise regularly. Another clue is to let your thoughts and feelings out. If you're under stress, talk to people about how you feel. Learn to recognize when stress becomes distress for you, and withdraw from the stress-producing situation for a while. Often, when people engage in relaxing activities, they find solutions and can return to situations refreshed. Any way you look at it, we need stress in our lives, but we also need a time to regroup and relax. If we fail to maintain a good balance, our bodies will be sure to let us know.

Stress-related Disorders

Here is a list of disorders related to stress. Can you see how and why a person under stress could develop these symptoms?

Acne, Cough, Constipation, Hives, Depression, Overeating, Lack of appetite, Headaches, Nightmares, High blood pressure, Tics, Diarrhea, Colitis, Temper episodes, Fatigue, Crying, Fearfulness, Indigestion, Smoking, Accident-proneness, Heart pounding, Irritability, Dry mouth, Impulsiveness, Sleeplessness, Lack of concentration, Dizziness, Gout, Heart disease, Duodenal ulcers, Excessive sweating, Neck pain, Back pain, Alcohol abuse, Asthma, Weight gain, Weight loss.

alth Test
ress and Relaxation

Name _____ 100
Period _____

ltiple Choice.

___ 1. The body's normal reaction to any demand made on it is;
A. eustress B. distress C. stress D. stress response

___ 2. This is another name for the stress response;
A. eustress B. fight or flight C. distress D. residual tension

___ 3. He was known as the " father of stress ";
A. Hans Selye B. Meyer Friedman C. Chevruel D. Mr. "P".

___ 4. The term for nervous movements when a person is trying to relax is;
A. stress B. tension C. residual tension D. hyperactive

___ 5. This substance is released from the liver as part of the stress response;
A. beta-endorphins B. HDL's C. LDL's D. adrenalin

___ 6. Which is NOT a feeling associated with the inhalation phase of breathing?
A. tension B. upward C. warmth D. dryness

___ 7. Which is NOT a feeling associated with exhalations?
A. heaviness B. upward C. warmth D. moisture

___ 8. The first two breathes we took at the beginning of the relaxation techniques were called;
A. starting breathes B. clean breathes C. beginning breathes D. cleansing breathe

___ 9. Which of these did we do to help improve our concentration;
A. close our eyes B. lie down C. exhale D. didn't cross anything

___ 10. Which stage of Selye's General Adaptation Syndrome is where you learn to cope with the stress?
A. alarm B. resistance or adaptive C. exhaustion D. residual

___ 11. Which of the following is NOT part of the stress response?
A. increased heart rate B. increased breathing rate C. decreased blood pressure
D. decrease (cooler) skin temperature

___ 12. Which of the following is NOT a part of the relaxation response?
A. decreased heart rate B. decreased blood pressure C. decresed adrenalin
D. decreased (cooler) skin temperature

___ 13. This is what happens as a result of too much stress over too long a period;
A. stress B. eustress C. distress D. unstress

___ 14. This is the exact opposite of stress;
A. relaxation B. relaxation response C. distress D. eustress

___ 15. This kind of person becomes stressed in many situations;
A. type A B. type B C. normal D. hyper

atching.

____ 1.	Quiet environment	A. sress
____ 2.	First stage of stress	B. Eustress
____ 3.	Proved the mind can control the body	C. Distress
____ 4.	All the body changes that get us ready for stress	D. Stress Response
____ 5.	The body's normal reaction to demands on it	E. Relaxation
____ 6.	This causes a slowing down of all the body processes	F. Relaxation Response
____ 7.	the opposite of stress	G. Inhalations
____ 8.	good stress	H. Exhalations
____ 9.	bad stress (makes us sick)	I. Basic of Relaxation
____ 10.	He developed th General Adaptation Syndrome	J. Alarm Stage
____ 11.	This stage can cause illness	K. Adaptive or Resistance Stage
____ 12.	This stage helps us to cope with stress	L. Exhaustion Stage
____ 13.	Helps us to relax in a hurry	M. Chevruel
____ 14.	Part of the breathing cycle that causes tension	N. Selye
____ 15.	Part of the breathing cycle that causes relaxation	O. " Quick Copers "

Fill in the Blank. THESE ARE WORTH TWO POINTS EACH !!!!!

What are the four Basics of Relaxation that we need to have if we are trying to relax?

1. _____ 2. _____

3. _____ 4. _____

What four feelings were you asked to concentrate on when we were doing relaxation exercises?

1. _____ 2. _____

3. _____ 4. _____

What were two quick ways of coping with stress that we mentioned in class?

1. _____ 2. _____

**** You may get some ideas for answers to these questions by looking at the questions on the first page!!!!!!!!

APPENDIX F

SAMPLE OF A COMPLETED LOG

I understand that it is important to take my pulse at the same time each day in the same location (neck or wrist). Preferably, the readings should be taken in the morning before you come to school. It is just as important not to make up an imaginary reading should I forget to take a reading. I will also record my levels of stress and conflict at the same time of day using the scale below. I will record an NR for any forgotten reading.

Stress can be defined as feelings of pressure, tension or worry you feel right at this moment.

Conflict can be defined as any arguments or situations which cause bad feelings either at school or at home since your last recording.

2

Here is the scale you should use to measure your levels of stress and conflict.

1	2	3	4	5
I feel little or no stress/ conflict	I feel mild stress/ conflict	I feel average stress/conflict	I feel above average stress/ conflict	I feel extreme stress/conflict

I agree to take my pulse at the same time each day. I will take it at 5:30 a.m. on each of the following mornings. Use the chart below to make your recordings.

Date	Sat 4	Sun 5	Mon 6	Tue 7	Wed 8	Thur. 9	Fri. 10	Sat. 11	Sun 12	Mon 13	Fri 17	Mon 20	Fri 24	Mon 27	Fri 2	Mon 6
Pulse for 15 seconds	17	18	18	17	19	18	17	X	16	16	17	19	X	X	X	
	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4	x4
Pulse for 1 minute	68	72	72	68	76	72	68	X	64	64	68	76	X	X	X	
Level of Stress	3	4	3	3	5	3	4	X	3	3	3	4	X	X	X	
Level of Conflict	2	4	3	4	3	3	3	X	3	3	3	4	X	X	X	

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