

THE EFFECTS OF A STRESS MANAGEMENT  
CURRICULUM ON ELEMENTARY  
SCHOOL CHILDREN

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This dissertation is dedicated,  
with all my love, to  
Mark and Jessica.

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## CHAPTER I

### INTRODUCTION

In our society stress has become an important issue. There seems to be a general concern about the adverse effects that stress has on human behavior with virtually every activity pursued by human beings involving some type of stress. This phenomenon can be either positive or negative, depending on how each individual perceives the situation.

Today many scholars (Coleman, 1978; Edlin & Galanty, 1982) feel that childhood and adolescence are two of the most stressful periods in one's life. It has been suggested that children are often unable to cope with the tremendous amounts of stress placed on them when they participate in popular childhood activities such as organized sports (Brower, 1978; Sayre, 1975). Several researchers (Coville, 1979; Martens, 1978; Smith & Smoll, 1982) have suggested that sports and physical education can serve as a training ground for children to learn the skills necessary to cope with the pressures and stress of everyday life.

In spite of the increased interest in this area by some physical educators, the amount of systematic research that has been done is limited. Several stress management pro-

grams have been developed for teachers to incorporate within their regular physical education curriculum but few programs have actually measured changes (Coville, 1979; Bird, 1980). Most of these programs have focused on deep breathing exercises, progressive relaxation and guided imagery. Educators who have developed stress management programs for children (Coville, 1979; Bird, 1980) advocate teaching several relaxation strategies. The reason for introducing a variety of techniques is to increase the chances of a learner finding a strategy with which he or she feels comfortable. The studies that have collected data (Selterlind & Patriksson, 1981; Richardson, Beall & Jessup, 1982; Ritson, 1979) are consistent in their findings. The main objective of the research in these studies was to systematically test and evaluate simple relaxation programs and tension control techniques on students. Selterlind and Patriksson's (1981) findings revealed that the majority of students that participated in their six week relaxation program enjoyed the relaxation exercises. Forty percent of the students that participated felt that they could get into a relaxed state without assistance of the program.

Richardson et al. (1982) measured physical changes that occurred within students who participated in a three week relaxation program. The results of his research showed that the experimental group was able to significantly lower their resting heart rate. An investigation conducted by Ritson (1979) also indicated that subjects, after being exposed to

a relaxation curriculum, were able to significantly lower their heart rate. Studying and practicing relaxation techniques did seem to help a student control his or her anxiety level. However, the studies investigating these changes were usually in the pilot stage (Selterlind & Patriksson, 1981; Ritson, 1979). The investigations also seemed to lack follow-up and reliable testing measurements.

Research in the area of stress reduction in children is limited and the results seem inconclusive. Researchers have indicated that learning stress management techniques may reduce stress in children; however, there is little empirical evidence to substantiate this. Even though it might be concluded that the effects of stress on children may be alleviated by educating and allowing them to practice stress management techniques, much research in the area is needed to identify techniques for assisting children in the reduction of stress.

#### Statement of the Problem

The problem was to determine the effects of a stress management curriculum on elementary school children.

#### Hypotheses

The following hypotheses were tested at the .05 level of significance. Each of the stated hypotheses was examined to see if a difference occurred between the experimental and control group, between either two or three time periods and

if an interaction existed between the groups and time periods. It was hypothesized that:

1. There would be no significant difference in the impact of the stress management curriculum and the children's perceptions of their response to stress.
2. There would be no significant difference in the impact of the stress management curriculum and the teacher's perception of the child's response to stress.
3. There would be no significant difference in the impact of the stress management curriculum and the parent's perception of the child's response to stress.
4. There would be no significant difference in the children's resting heart rate before and after participating in the stress management curriculum.
5. There would be no significant difference in the impact of the stress management curriculum and the children's perception of their response to stress in relationship to the grade of the children.

#### Delimitations

This study was delimited by the following:

1. A panel of experts who were consulted to

establish the validity of the questionnaires used as part of the study.

2. Only two elementary schools were used.

#### Limitations

This study was limited by the following:

1. The classrooms were kept intact instead of randomly assigning individuals into a control or experimental group.
2. Physiological stress was measured by heart rate taken by the students.

#### Definitions

In order to understand the terms used in this study, the following definitions are provided:

Stress: A process where a substantial imbalance occurs between environmental demand and response capability, under conditions where failure to meet the demand has important consequences (McGrath, 1970).

Stress process: The stress process is an expansion of the definition of stress. The process consists of four interrelated stages. Those stages include: 1) The situation that arises, 2) How the individual perceives the situation, 3) The response the individual has to the situation and 4) The behavior the individual displays as a result of the response (McGrath, 1970).

Anxiety: The term "anxiety" describes an emotionally

unpleasant condition caused by arousal of the autonomic nervous system and is characterized by feelings of tension, worry, and apprehension (Speilberger, 1972).

Relaxation: Relaxation is a muscular-skeletal skill which will not only benefit a person's general motor skill acquisition but will also provide a person with life-long fitness by enabling them to control and regulate the level of tension they feel (Coville, 1979).

Progressive relaxation: A term which implies the ability of an individual to focus on and relax specific areas of the body. This type of relaxation eventually includes relaxing the entire body.

Autogenic Phrases: A type of relaxation technique that is associated with self-directed mental images of relaxed states. It is a relaxation technique that is primarily used after being taught progressive relaxation.

Mini-quickies: An instructional technique, developed by David Daskin, a stress management expert at Kansas State University, that is used after other types of relaxation have been taught. Mini-quickies focus on the ability to relax one's self in a short period (10 to 30 seconds) of time.

Stretching: An instructional technique focusing on deep breathing and relaxation training through passive or sustained stretching.

Guided imagery: A type of relaxation technique that focuses on "mentally" calming the body through pleasant thoughts.

## CHAPTER II

### REVIEW OF LITERATURE

Though the literature concerning the impact of stress management curriculums in elementary physical education classes is limited, there has been much research conducted on the effects of stress. The review of literature in this chapter is classified into four categories: a) the stress process, b) research findings on the effects of stress, c) stress research in children's sport and d) stress research in health and physical education settings.

#### The Stress Process

Stress has many meanings for many people; therefore, it is important to clarify the term stress. Duncan (1980) defined stress as the rate or intensity at which people live at any given moment. Stress can interrupt an individual's psychological or biological rhythms. This disruption can be caused by a person, event and/or the environment. Duncan further broke down his definition of stress into mental (stress that causes forgetfulness or the inability to concentrate) and physical (stress that causes a sense of exhaustion or hyperactivity).

Selye (1974), the individual responsible for developing



the concept of stress and the impact stress has on a person, defined stress as a non-specific response of the body to any demand placed upon it. Selye went on to define the term "nonspecific". He explained that each demand made upon our body is in a sense unique or specific. An exertion of any type can cause an increased demand upon our musculature and cardiovascular system. No matter what type of demand is produced, all these things have one thing in common, they increase the demand for readjustment. This demand is non-specific and it requires an adaptation by the body regardless of what the problem is. The nonspecific demand for activity is the cause of stress. From the point of view of its stress-producing activity, it is immaterial whether the agent or situation faced is pleasant or unpleasant. The intensity of the demand for readjustment or adaptation is what matters.

Speilberger (1972) defined stress as denoting different aspects of temporal sequences of events that result in an anxiety reaction. He stated that the reactions can be physical or psychological, depending on how the person perceives it. Speilberger contended that when a person is under stress he or she will feel an increase in heart rate, sweating, shallow breathing, and anxiousness.

Depending on the cognitive style that the individual uses to appraise the presence or absence of a threat determines if one has adapted, not only in detecting and/or protecting the individual against the threat, but also in

discriminating between important and irrelevant stimuli. The style must suit the individual's self-concept, and it must be open to satisfaction and pleasure. Once the stimulus has been appraised as threatening, coping processes begin functioning to reduce or eliminate the anticipated harm. These processes depend on cognitive activity.

A descriptive definition of the stress cycle has been developed by McGrath (1982) which provides a foundation for research. McGrath theorized that stressful situations begin with some situation or circumstances in the person's environment. The individual's perception of the situation causes the undesirable state. If this state of affairs is left unmodified, the individual will have to choose some response alternative (including escape or interaction) and execute that response with the intention of changing his or her relationship to the situation in a more favorable direction. This description views a stressful situation as a four-stage, closed-loop cycle. The four stages are connected by four linking processes which provide the substance for the study of stress.

The first link is between the objective situation and the perceived situation and is called the appraisal process. This appraisal, made by the individual, is subjective and can be perceived as threatening or non-threatening. The second process link is between the perceived situation and the decision-making process. This stage involves relating the situation (as perceived) to the available alternatives

and selecting a response or set of responses intended to modify the situation. The operation and effectiveness of this process depends on the outcome of the prior appraisal process and the individual's past experiences, current physical and psychological state, response repertoire and available resources. The third link is the response process or performance process of the individual. The effectiveness of that performance depends on the ability of the person, the difficulty of the task and the performance standards against which the response is compared. The final link occurs between the response process and the objective situation. This link is the outcome process which represents the effects of the behavior on the person in the situation. This link often seems to be ignored (Khrono, 1982). The extent to which the individual's behavior results in desired or undesired change depends not only on the person's level of performance, but also on several factors which are not under the individual's control. Those factors include the performance level, timing of the behaviors of others involved in the situation, and the nature and certainty of the behavior situation linkage that occurs.

#### Research Findings on the Effects of Stress

Studies on classroom performance of children experiencing stress have reported a variety of results. Leith (1972) designed a study to determine whether children's responses

to creativity tests were influenced by the personality of the subjects and the amount of stress imposed on the subjects by different testing procedures. One hundred and six children (9, 11, and 13 years of age) were given intelligence tests and tests of extraversion and anxiety. The subjects were also given three verbal creativity tests. One half of the children took the tests in a moderately stressful atmosphere while the other half of the children took the tests in a relaxed atmosphere. The results of the study indicated that the number and the originality of responses to the creativity tests were greater in the stressful condition, and there was a disordinal interaction of both extraversion and anxiety in the stressful situation. The results of the study also indicated a potential for the responses of introverts to be inhibited under relaxed conditions.

Several researchers (Bennett et al., 1978; Freidman et al., 1978; Trym, 1980) investigated the relationship between test anxiety of children who have, and have not, practiced stress management techniques. Their findings indicated that by using a variety of relaxation methods, students were able to sometimes raise their classroom test scores. Their research also indicated that the students showed an improvement in their scores on measures of test anxiety. The studies collectively agreed that persons taught to relax feel less anxious when taking tests. However, an improvement in grades on classroom tests approached, but did not always reach, a level of .05 significance (Danskin, 1981).

Carter (1978) conducted four studies to see if relaxation training would make a difference in children's reading abilities. Three of the studies used boys who were identified as learning disabled for subjects. The remaining study used 30 boys and girls who had learning problems. All of the studies followed the same protocol. The experimental students listened to a 10 minute pre-recorded relaxation exercise in groups of five to eight. Each was then given a packet of handwriting exercises to practice for the remainder of the hour. One child at a time was taken out for electromyography (EMG) feedback training. Training was for the relaxation of the forearm flexor muscle. The training took place for five two-minute periods (10 minutes total) twice a week for five weeks. In each one of the four studies the experimental group showed significant gains on a wide range of achievement tests in reading in addition to the Gray Oral Reading test.

Subvocalization is another area that has been investigated. Subvocalization is the tendency to mouth words when silent and limits an individual's speed in reading. Parasky Papsdorf (1976) studied sixth grade subvocalizers. Their treatment was EMG training when silently reading to suppress lip and chin movement. The researcher found the training to be effective. Papsdorf reported that his data suggested there might be some beneficial effects on the comprehension of what the subject read as well. Researchers Hardyck and Petrinovich (1969) found similar results with high school

and college students in the area of subvocalization.

Hyperactivity in children has been reduced in children as a result of EMG and relaxation training (Bravde, 1979). Thirty hyperactive children were divided into two groups. One half of the group received EMG training while the other half received progressive type relaxation training. Each group had 12 training sessions, 2 per week for 6 weeks, with each session lasting 30 minutes. Parents were also taught how to help their children practice at home. When compared with children not having any training, both treatment groups showed significant reduction in muscle tension levels and had improved scores on tests related to hyperactivity and behavior ratings. A study conducted by Omizo (1981), dealing with biofeedback and relaxation training of hyperactive elementary school children, found similar results. Biofeedback and relaxation training showed decreasing hyperactive behaviors as rated by parents and teachers.

#### Effects of Stress and Research Findings on Children in Youth Sports

The study of stress in children's sport has received attention since the early 1950's. Skubic (1955) examined this issue in a study of little and middle league male baseball participants. Specifically, state anxiety was measured by assessing galvanic skin responses (a measure of sweat gland secretion) in the boys before a game, after a game and in a required physical education class competition.

The results revealed that the boys demonstrated significantly higher levels of postgame, as compared to pregame, state anxiety. No differences were found between the anxiety levels assessed in the baseball game when compared to the physical education class competition.

A more comprehensive examination of stress resulting from children's sports participation was conducted by Simon and Martens (1979). In this investigation precompetitive state anxiety levels of boys, ranging from 9 to 14 years of age were assessed in a variety of sport and non-sport competitive activities. Specifically, comparisons of state anxiety levels were made between boys participating in:

- a) the nonschool competitive sports of baseball, basketball, tackle football, gymnastics, ice hockey, swimming and wrestling;
- b) the nonrequired nonschool competitive activities of band solos and band group competitions; and
- c) the required school activities of an academic test and physical education class.

The results revealed that the boys participating in the nonrequired, nonsport activities exhibited the highest state anxiety, followed by the boys participating in the nonschool sport activities. The boys who participated in the school activities showed the lowest levels of anxiety. Comparisons of the individual activities revealed that participants in band solos exhibited the greatest anxiety, while the physical education participants showed the lowest levels of anxiety.

In two related investigations, Scanlan and Passer

(1978, 1979) also examined the degree of stress that children experience in sports. Specifically, precompetitive state anxiety levels of soccer players, ages 10 to 12, were assessed in these studies. While no comparisons were made to nonsport activities, the relationship between player levels of A-trait, playing ability, game importance, expectancy of team success, self-expectancy of success, game outcome, game satisfaction and pre- and post-game state anxiety were examined. Their findings revealed that the children as groups were not placed under excessive amounts of stress. However, it was indicated that "sport competition can be perceived as threatening or an anxiety-inducing experience by some children and under some circumstances" (Scanlan & Passer, 1978, p. 199).

A number of interpersonal and environmental factors have been found to be related to increased state anxiety in young athletes. For example, in the Scanlan and Passer (1978, 1979) soccer studies a number of factors were found to be associated with children who experienced increased state anxiety. Specifically,

. . . players who were high competitive trait anxious, who had low self-esteem, and who had low performance expectancies experienced greater perceived threat and experienced high state anxiety when facing a pending competition than did those who were low competitive trait anxious, who had high self-esteem, and who had high performance expectancies (p. 199).

Moreover, game outcome and the amount of perceived fun were found to be related to the amount of post-game state anxiety



experienced.

Many of these initial soccer findings have been replicated in a recent follow-up investigation with young wrestlers ages 9 and 14 (Scanlan & Lewthwaite, 1982). For example, post-match state anxiety was found to be related to match outcome and fun, while losers and those reporting less fun experienced the greatest state anxiety. Similarly, high trait anxiety and low personal performance expectancies were related to heightened state anxiety. Not only were a number of the previous findings replicated, but some additional factors related to heightened state anxiety were identified. Specifically, low perceptions of parental satisfaction with performance and frequent worries about failure to meet parental and coach performance expectancies were found to be associated with heightened anxiety. Thus, the children's perceptions of expectancies and reactions of "significant others" were found to be related to heightened state anxiety.

Pierce and Stratton (1981) also examined factors related to heightened anxiety states in youth sports participants, ages 10 to 17. Five hundred and forty three children were asked to rate their biggest worries about competitive sports participation. Their findings revealed that "not playing well", "making mistakes", and "wondering what their coach and teammates think and say" were major worries. Thus, fear of failure and fear of negative social evaluation were the biggest worries of these young athletes.

Finally, in a discussion of the stress and children's sport research, Martens (1978) identified two major factors related to heightened state anxiety in young athletes. These included feelings of uncertainty and the importance placed on events. For instance, the more uncertainty a child perceives regarding the outcome of the game or event, his or her relationships and/or capabilities with others, the more state anxiety will be experienced. Martens also made the important observation that adults through their actions can often knowingly and unknowingly influence the young athlete's perception of event importance and uncertainty.

Effects of Stress and Research Findings on  
Children in the Health and Physical  
Education Curriculum

Research conducted in the area of stress management and its impact on the physical education curriculum is limited. Even though several physical educators (Coville, 1979; Bird, Cripe, Morrison, 1980) advocated the necessity of adding stress management techniques to elementary physical education programs, very few studies have been conducted to see if the curriculums make a difference in the stress levels of children.

The most indepth study was conducted by Selterlind and Patriksson (1981). The study was initiated because the researchers were discouraged about the lack of research

available in the area of tension control. The main goal of the study was to systematically test and evaluate simple and short programs for tension control techniques on students. Selterlind and Patriksson were also investigating to determine what were the long and short term effects of relaxation training. Specifically, selected psychological (anxiety, self-concept and confidence, body awareness and perceived rest) and physiological (respiration, heart rate, blood pressure, lactate, and catecholamines) variables were studied.

The design of the Selterlind and Patriksson (1981) study was experimental. There were 294 subjects in the experimental group and 287 subjects in the control group. Each subject was randomly selected from the school setting where the research was conducted. Measurements of the students were taken before, during and after the experimental period. The experimental situation consisted of the following three steps:

1. The stress concept was introduced and discussed in the initial lesson. In this lecture, motivation for and information about relaxation was given.
2. Different programs of relaxation were practiced over a period of six weeks.
3. Different psychological tests and questionnaires were given during and after the experimental period.

It should be noted that all of the physical educators who participated in the study received relaxation training before the experiment started. The students were trained with the help of eight different tape recorded programs. The relaxation techniques were introduced at the end of the physical education class three times a week and varied in time between 7 to 12 minutes. The relaxation techniques included muscular relaxation, mental relaxation, learning of a "trigger" or a specific stimulus or signal which alone can elicit relaxation, deepening relaxation and some self-training techniques.

During the experimental period of six weeks participating students answered questions on four different occasions directly after they had finished the relaxation training. One of the questions asked was his or her opinion about the relaxation training sessions. About 90 percent were positive, 8 percent were neutral and 2 percent were negative. The researchers also asked students how he or she perceived the relaxation training. Ninety to 94 percent of the students thought the relaxation training was pleasant, about 7 percent felt neutral and 1 to 2 percent felt the training was unpleasant. When the students were given the "mood test", developed by Svesson (1978), 88 to 93 percent agreed that they perceived a feeling of relaxation after a training session.

At the end of the training sessions, students were asked to answer some retrospective questions about the

training. One of the questions asked was "did you learn to relax". Fifty-five percent of the subjects marked yes, 43 percent marked perhaps and 2 percent marked no. Other findings from the questionnaire showed that 40 percent of the students in the experimental group knew they could relax without assistance from the instructor, while 56 percent of them were unsure. More than 90 percent of the students said it was "easy or very easy" to learn relaxation by means of the program. Among the perceived subjective effects of relaxation training, 50 percent thought they would be able to do their school work better, 33 percent believed they would sleep better, 60 percent felt less stressed and 40 percent felt more at ease with themselves.

Richardson et al. (1982) conducted a study that measured the effects of a high school stress management unit on student's heart rate and muscle tension. The purpose of this study was to determine the effectiveness of a three-week stress management unit for high school students. The primary indicators of the unit's effectiveness were the pre-test, post-test and follow-up measures of heart rate and muscle tension. These measures were used to determine the amount of control students demonstrated during a period of relaxation and a period of induced stress. The stress management unit consisted of 15, 50-minute classes extending over a three week period. The first two days and last two days of the unit were spent recording heart rates and EMG responses. The remaining 11 class sessions were used to

present the unit. The unit consisted of the following three parts: the nature of stress, identifying stressors and stress management techniques. It should be noted that after the first two days of the unit, the last 15 minutes of each class was devoted to experimental learning activities focusing on biofeedback, imagery, progressive relaxation, meditation and improving concentration.

Subjects for the Richardson study were students in three required health classes. Two classes served as the experimental group, and one class served as the control group. A groups x times x test analysis of variance with repeated measures on the two factors, heart rate and EMG responses, was utilized to determine any significant difference between resting, relaxing and mental stress states for the experimental and control group.

The analysis of heart rates indicated main effects among groups. Further analysis of the heart rate data interactions showed a .05 level of significance with the three different variables. Although the control group had a lower mean heart rate, it was generally constant for the relaxed and stressor measurement. The experimental groups demonstrated significantly lower heart rates on the post-test than on the pre-test.

The EMG data analysis indicated significant differences. The time effect for EMG means produced a significant level at  $P=.0018$ , while the test effect produced a significant level at  $P=.0003$ .

The significant differences noted for all sources of variance in heart rate indicated that the skills learned by the experimental group were helpful in their post and follow-up situations. Since the only significant difference in the EMG was noted for time and test, one may make some logical suppositions about why no group effect was noted. One explanation would be that the muscle used, the trapezius muscle, is easy to relax. A major limitation of the study was that the experimental group met after lunch and the control group met before lunch. The ingestion of food and potential activity during the lunch hour could be the major reason why the experimental groups heart rates and EMG readings were higher at rest. The fact that the experimental group had a higher heart rate does not weaken the results that the experimental group was able to significantly drop their heart rate, not only below their resting heart rate, but also below the control group's heart rate at rest. The control group showed no significant change.

One of the more subjective items that Richardson noted was that it was interesting to view students of the experimental group during the testing instructions for post-test and follow-up. When the subjects received the command to "relax as best you know how", they would close their eyes, take deep breaths and fantasize or progressively relax. Individual measures indicated that many students dropped their heart rates 10 to 15 beats per minute merely by employing skills rehearsed in class.

A master's thesis on the impact of neuromuscular relaxations was conducted by Ritson (1979). This study was to determine the effects of a neuromuscular relaxation treatment applied after a physical education period on recovery pulse rates of fifth graders. The number of subjects used was 25. Students were required to take their pulse before they entered the classroom and five minutes after they were in the classroom. There were four phases to the study, and all of the students participated in all phases.

The first stage was a baseline treatment that lasted 7 days. No treatment was given during this phase except for the fact that the students took their heart rate. The treatment phase of the study was administered next and lasted 20 days. It was during this phase that the subjects participated in short neuromuscular practice at the end of physical education class. The third stage was called baseline two. This phase included a withdrawal of the treatment and lasted for 6 days. The final phase was treatment two in which the intervention of the neuromuscular relaxation technique was used again. At the end of the program a total of 22 subjects showed a lower heart rate at the significance level of .05, and 15 of them showed a significant difference in their heart rate at .01.

Krampf et al. (1979) felt that muscle tension was directly related to an individual's emotional state. Krampf developed a program of muscular relaxation that was an integral part of a summer youth fitness school. The age of



the children involved ranged from 7 to 14 years of age. The program consisted of a series of guided progressive sessions to assist the children in becoming aware of tensions and how to release them. There were four major components to the program that Krampf used. They were: 1) the relaxation of individual muscles, 2) the relaxation of muscle groups, 3) the relaxation of principle muscle group, and 4) the relaxation of the total body.

The researcher determined that the results of the study showed that muscular relaxation is beneficial as a source of preventive medicine and for helping children cope with stressors.

#### Summary

As indicated in the review of literature, excessive levels of stress cannot be found in most children. However, some children do experience stress and anxiety and it can affect their ability to perform in a variety of tasks.

As a result of this possible influence of stress and anxiety upon performance, various psychological and physiological interventions have been employed to reduce these variables. Research in the area of stress reduction in children is limited and the results of these studies seem to be inconclusive. Researchers have indicated that learning stress management techniques may reduce stress in children; however, there is little empirical evidence to substantiate this.

## CHAPTER III

### METHODS AND PROCEDURES

The purpose of this study was to determine if a stress management curriculum made a significant impact on children's perceptions of their ability to respond to stress. It was also the purpose of the study to determine if parents and teachers also perceived a change in the children's ability to respond to stress after participating in the stress management curriculum. Another purpose of this study was to determine if children would be able to significantly lower their resting heart rate after participating in the stress management curriculum.

The procedures described in this chapter are categorized into three sections: a) pilot study, b) preliminary procedures, and c) operational procedures. The preliminary procedures were: a) selection of subjects, b) selection of instruments, c) selection of the panel of experts, and d) the development of the stress management curriculum. The operational procedures were the collection of data and treatment groups.

## Pilot Study

Due to the subjective nature of the stress management curriculum being used in this study, a pilot study was administered in three elementary schools with approximately 350 children voluntarily participating for an eight-week period. The purpose was to investigate the feasibility and effectiveness of the stress management curriculum. Classes were assigned to an experimental or a control group. The students ages ranged from 7 to 12 years. All classes remained intact.

The stress management curriculum in the pilot study consisted of utilizing five types of relaxation techniques. These relaxation techniques included progressive relaxation, autogenic phrases, guided imagery, stretching and mini-quicknesses. The children received the treatment during their physical education classes. The physical education classes met three times a week. A time period of 10 minutes was devoted to practicing stress management techniques for the eight-week period.

In the pretreatment assessment, body temperature readings and self-evaluation questionnaires were administered to each subject. In addition, parents and teachers were also asked to complete questionnaires about the child's ability to reduce stress. These measurements were obtained to see if a change would occur as a result of participating in the study.

After the groups had completed four weeks and eight weeks of the treatment, body temperature readings and self-evaluation questionnaires were completed by the subjects, parents and teachers.

As a result of the pilot study, it was concluded that a change did occur in the children's ability to identify stress and cope with uncomfortable feelings they might experience. However, some revision of the curriculum was necessary. The information given to the learners needed to be much more concise and the techniques used needed to be reduced from five to four. Mini-quickies were deleted from the curriculum because of the short duration of each mini-quickie taught. It was also determined that measuring body temperatures was too time consuming and difficult for young children.

### Preliminary Procedures

#### Selection of Subjects

Two schools were selected to participate in the study because of the interest the physical education instructor had shown in the study. Each school had a first, third and fifth grade class that participated in the research project and each grade had a control group and experimental group randomly chosen with classes remaining intact. The students and parents were asked to sign an informed consent sheet (see Appendix A). This form included a brief statement

explaining the proposed research and a permission slip to be signed by parents indicating approval for participation of their child in the program. One hundred and fifty two students participated in the study.

#### Selection of Instruments

Three types of questionnaires were used in the study and can be found in Appendix B.

Each questionnaire was developed by the researcher and Dr. Susan Miller, elementary physical education specialist at Washburn University. In order to insure their validity each questionnaire was evaluated by a panel of experts.

#### Panel of Experts

Once the questionnaires were developed for testing purposes, the researcher selected a panel of experts to determine the questionnaires' validity. Five individuals were selected for the panel, because of their expertise in the areas of stress management, elementary physical education or reading. Four out of the five responded. The individuals who agreed to participate were: Dr. James McCormick, department chair and stress management specialist, Washburn University; Dr. Michael McKenna, reading specialist, Wichita State University; Dr. David Danskin, counselor and stress management specialist, Kansas State University; and Dr. Steve Moyer, elementary physical education specialist, Oklahoma State University.

Each individual was sent a letter with an evaluation form asking them to evaluate each questionnaire that was to be used in collecting data. They each completed an evaluation form. The letter and evaluation forms can be found in Appendix C. It was determined prior to distributing the letters that three negative responses to a question would warrant a change in the questionnaire. The experts agreed that the content of the questionnaires was appropriate. The panel of experts felt, however, that the reading level of the children's questionnaires needed to be modified for the younger children.

Dr. Michael McKenna, reading specialist at Wichita State University, was consulted about the changes that should be made. He suggested three alterations to the questionnaires format which were incorporated into the final version. The first change was to shorten the sentences so that young readers would be able to remember and understand what they read. Negative words were converted to contractions when possible. For example, instead of the word "cannot" appearing on the questionnaire the word "can't" would be used. The final suggestion Dr. McKenna made was that the teacher read each question to the students as they fill out the questionnaires. This would make it possible for students of low reading ability to potentially answer the questionnaires more accurately.

The panel of experts agreed upon the initial form of the parent and teacher questionnaires.

## Development of the Stress

### Management Curriculum

The stress management curriculum that was used in the study was developed by this researcher and Dr. Susan Miller. It is an eight-week program that was administered to the experimental group during physical education classes. Approximately 20 days was needed to complete the program. The curriculum educated students about stress and physical changes that might occur as a result of stress. Several stress management techniques were taught including progressive relaxation, guided imagery, mini-quickies and stretching.

### Operational Procedures

#### Collection of Data

The physical education teacher implementing the stress management program into her physical education curriculum was trained by the researcher prior to the beginning of the study. The four hour training session included reviewing the film and tapes that were used, administering the different exercises and collecting the data. Since the same physical educator helped administer the pilot study, problems that occurred were also discussed. The curriculum's format was predetermined by the researcher and was administered by the physical educator. A copy of the stress management curriculum can be found in Appendix D.

All treatments consisted of three sessions per week for eight weeks. Each stress management treatment lasted approximately 10 minutes, with the exception of the first class period. That class lasted approximately 20 minutes because of a filmstrip that was shown.

Heart rates were used as a measurement of physiological changes that occurred during the study. Students were taught how to take their heart rate prior to the beginning of the treatment. This skill was practiced by the students until a 90 percent accuracy rate was shown by each individual. In order to insure the 90 percent accuracy rate, the physical education instructor took the heart rate of five children in each class at the same time the student was taking it. Both the teacher and the students' readings were recorded on a form to determine the accuracy the student had when taking their heart rate. On days 11, 16 and 21 heart rate measurements were recorded by all students.

Questionnaires were used during the time period that the subjects were receiving information about stress management techniques. A questionnaire was given to the subjects. The parents and classroom teachers completed their questionnaire at the beginning of the study and during the fourth and eighth week of the treatment. The control group also completed the questionnaires during the same time frame.

In addition to participating in different stress management techniques, the students in the treatment group recorded their feelings about the stress management curricu-



lum and heart rate measurements in a log book that was designed to be compatible with the study. An example of the log book can be found in Appendix E.

The control groups followed the same time schedule as the experimental groups. They had a five minute quiet time session on the days the experimental groups received information regarding stress management. The measurements taken from the experimental groups were collected from the control groups at the same time. The heart rate measurements were recorded on individual sheets of paper and the questionnaires were the same as the experimental groups.

#### Research Design

An experimental research design was used to determine the effects of the stress management curriculum on elementary school children. The independent variables in this study were the groups the children were in, the grades the children were in, and the time at which the data was collected. The dependent variables included the scores from the questionnaires that were completed by the parents, children, and teachers. Heart rate measurements were also included as a dependent variable.

#### Statistical Analyses

The statistical analysis used a 3 x 3 x 2 ANOVA with repeated measures for each dependent variable. The Newman-Keuls test was used to investigate where difference within

the means occurred. The level of significance for this study was .05.

## CHAPTER IV

### RESULTS AND DISCUSSION

The purpose of this chapter is to present the results and to provide a discussion of the results. This chapter is divided into the following sections: a) analysis of hypothesis data and b) discussion of results.

#### Analysis of Hypothesis Data

Five hypotheses were evaluated in this investigation using the .05 level of significance. Each of the stated hypotheses was examined to see if a difference occurred between the experimental and control groups or between any of the time periods and to see if an interaction existed between the groups and the time periods.

#### Hypothesis 1

It was hypothesized that there would be no significant difference in the impact of the stress management curriculum on the children's perceptions of their responses to stress. The means and standard deviations for this variable can be found in Table I.

TABLE I  
MEAN SCORES OF CHILDREN'S PERCEPTIONS

	Week 4	Week 8	
Experimental	$\bar{x} = 22.0$	$\bar{x} = 21.6$	$\bar{x} = 21.8$
	$s = 2.87$	$s = 2.57$	$s = 2.86$
			$n = 67$
-----			
Control	$\bar{x} = 19.9$	$\bar{x} = 20.9$	$\bar{x} = 20.4$
	$s = 2.98$	$s = 2.85$	$s = 2.95$
			$n = 49$
-----			
	$\bar{x} = 20.95$	$\bar{x} = 21.25$	
	$s = 3.17$	$s = 2.67$	
	$n = 116$	$n = 116$	

A repeated measures ANOVA (Table II) was conducted using the Children's Perceptions Questionnaire to determine if any differences occurred when comparing the experimental group with the control group, when comparing the fourth week scores to the eighth week scores and by examining if an interaction existed between the groups and time periods.

TABLE II  
ANALYSIS OF VARIANCE TABLE OF  
CHILDREN'S PERCEPTIONS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	115.93	1	115.93	11.07*
Error	1193.83	114	10.47	
-----				
Time	5.73	1	5.73	1.08
K x T	24.76	1	24.76	4.65*
Error	607.04	114	5.32	

\*  $p < .05$

As noted in Table II, there was a significant difference between the experimental group and control group. Additionally, a significant interaction existed between the groups and the time periods. The Newman-Keuls range test was used to determine where significant differences occurred among the four means. The results of the Newman-Keuls test indicated that all of the mean scores of the children's perceptions, with the exception of the experimental group's fourth week mean score and eighth week mean score (see Table I), were found to be significant. Therefore, the stress management curriculum did not make a significant impact on the children's perceptions of their abilities to

respond to stress. The null hypothesis was accepted.

### Hypothesis 2

It was hypothesized that there would be no significant difference in the impact of the stress management curriculum and the teachers' perceptions of the children's responses to stress. The means and standard deviations for this variable can be found in Table III.

TABLE III  
MEAN SCORES OF TEACHERS'  
PERCEPTIONS

	Pre	Week 4	Week 8	
Experimental	$\bar{x} = 3.6$ $s = .81$	$\bar{x} = 3.4$ $s = .57$	$\bar{x} = 3.2$ $s = .61$	$\bar{x} = 3.4$ $s = .65$ $n = 53$
Control	$\bar{x} = 3.6$ $s = .81$	$\bar{x} = 3.5$ $s = .71$	$\bar{x} = 3.4$ $s = .87$	$\bar{x} = 3.5$ $s = .80$ $n = 72$
	$\bar{x} = 3.6$ $s = .83$ $n = 125$	$\bar{x} = 3.5$ $s = .65$ $n = 125$	$\bar{x} = 3.3$ $s = .77$ $n = 125$	

A repeated measures ANOVA (Table IV) was conducted using the Teachers' Perceptions Questionnaire to determine if any differences occurred by comparing the experimental group and control group, by comparing the pre-study, the fourth week and the eighth week scores, and by examining if an interaction existed between the groups and time periods.

TABLE IV  
ANALYSIS OF VARIANCE TABLE  
OF TEACHERS' PERCEPTIONS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	.76	1	.76	.63
Error	149.09	123	1.21	
-----				
Time	5.97	2	2.99	11.74*
T x T	1.56	2	.78	3.06*
Error	62.57	246	.25	

\*  $p < .05$

As shown in Table IV, there was a significant interaction that existed between the groups and time periods.

The Newman-Keuls range test was used to determine where

the significant differences occurred among the six means. The results of the Newman-Keuls test are shown below. The mean scores underlined are not significantly different.

<u>EXP</u>	<u>EXP</u>	<u>CON</u>	<u>CON</u>	<u>CON</u>	<u>EXP</u>
Week 8	Week 4	Week 8	Week 4	Pre-test	Pre-test
3.2	<u>3.4</u>	<u>3.4</u>	<u>3.5</u>	3.6	3.6

---

The mean scores (see Table III) of the experimental group were found to be significantly different at all three time periods. The mean scores of the control group were found to be significant only between the pre-study measurement and the eighth week measurement. Therefore, the stress management curriculum did make a significant impact on the teachers' perceptions of the children's abilities to respond to stress. The null hypothesis was rejected.

### Hypothesis 3

It was hypothesized that there would be no significant difference in the impact of the stress management curriculum and the parents' perceptions of the children's responses to stress. The means and standard deviations of the parents' responses are noted in Table V.



TABLE V  
MEAN SCORES OF PARENTS' PERCEPTIONS

	Pre	Week 4	Week 8	
Experimental	$\bar{x} = 30.8$	$\bar{x} = 28.9$	$\bar{x} = 28.7$	$\bar{x} = 29.5$
	$s = 3.16$	$s = 4.33$	$s = 3.14$	$s = 3.75$
				$n = 40$
-----				
Control	$\bar{x} = 28.7$	$\bar{x} = 28.4$	$\bar{x} = 27.6$	$\bar{x} = 28.2$
	$s = 3.80$	$s = 4.23$	$s = 4.69$	$s = 4.02$
				$n = 37$
-----				
	$\bar{x} = 29.8$	$\bar{x} = 28.7$	$\bar{x} = 28.2$	
	$s = 3.65$	$s = 4.07$	$s = 4.0$	
	$n = 77$	$n = 77$	$n = 77$	

A repeated measures ANOVA (Table VI) was conducted using the Parents' Perception Questionnaire to determine if any differences occurred by comparing the experimental and control groups, by comparing the fourth and the eighth week scores, and by examining if an interaction existed between the groups and time periods.

TABLE VI  
ANALYSIS OF VARIANCE TABLE OF  
PARENTS' PERCEPTIONS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	86.30	1	86.30	2.84
Error	2276.97	75	30.36	
-----				
Time	95.88	2	47.94	5.99*
P x T	22.27	2	11.13	1.39
Error	1200.15	150	8.00	

\*  $p < .05$

As shown in Table VI, there was no significant difference between the experimental and control groups. There was a significant difference in the groups' mean scores over the eight week period of time.

The Newman-Keuls range test was used to determine where the significant differences occurred among the six means. The results of the Newman-Keuls test are show below. The mean scores underlined are not significantly different.

<u>CON</u>	<u>CON</u>	<u>CON</u>	<u>EXP</u>	<u>EXP</u>	<u>EXP</u>
Week 8	Week 4	Pre-study	Week 8	Week 4	Pre-study
27.6	<u>28.4</u>	<u>28.7</u>	<u>28.7</u>	<u>28.9</u>	30.8

The mean scores of the experimental group were found to be significantly different between the pre-study measurement and the fourth week measurement. The pre-study measurement of the experimental group was also significantly different from the eighth week measurement.

There was no significant difference between the experimental group's fourth week measurement and eighth week measurement. The mean scores of the control group were found to be significantly different between the pre-study and eighth week measurement. A significant difference was also found in the mean scores of the control group between the fourth and eighth week measurement. There was no significant interaction that existed between the groups and time periods. Therefore, the stress management curriculum did not make a significant impact on the parents' perceptions of their children's abilities to respond to stress. The null hypothesis was accepted.

#### Hypothesis 4

It was hypothesized that there would be no significant difference in the children's resting heart rate after participating in the stress management curriculum. Heart rates were measured on days 11, 16, and 21 of the study for 15 seconds. The means scores and standard deviations of the heart rate measurements are shown in Table VII.

TABLE VII  
MEAN SCORES OF HEART RATE MEASUREMENT

	1st	2nd	3rd	
Experimental	$\bar{x} = 24.4$	$\bar{x} = 24.6$	$\bar{x} = 25.2$	$\bar{x} = 24.7$
	$s = 11.26$	$s = 12.00$	$s = 12.00$	$s = 11.62$
				$n = 74$
-----				
Control	$\bar{x} = 25.0$	$\bar{x} = 24.7$	$\bar{x} = 27.2$	$\bar{x} = 25.7$
	$s = 12.20$	$s = 10.80$	$s = 13.92$	$s = 13.02$
				$n = 69$
-----				
	$\bar{x} = 24.7$	$\bar{x} = 24.6$	$\bar{x} = 26.2$	
	$s = 11.94$	$s = 11.11$	$s = 12.78$	
	$n = 143$	$n = 143$	$n = 143$	

A repeated measures ANOVA (Table VIII) was conducted to determine if any differences occurred by comparing the experimental group and control group, by comparing the three time periods, and by examining if an interaction existed between the groups and time periods.

TABLE VIII  
ANALYSIS OF VARIANCE TABLE  
OF HEART RATE MEASUREMENTS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	99.53	1	99.53	.33
Error	43156.37	141	306.07	
-----				
Time	226.33	2	113.16	1.75
G x T	74.11	2	37.05	.57
Error	18280.02	282	64.82	

\*  $p < .05$

As noted in Table VIII, there was no significant difference between the experimental group and the control group. There was no significant difference in the two group mean scores over the eight week period of time. A significant interaction did not exist between the groups and time periods. Therefore, the stress management curriculum did not make a significant impact on the children's abilities to lower their resting heart rates. The null hypothesis is accepted.

#### Hypothesis 5

It was hypothesized that there would be no significant difference in the impact of the stress management curriculum

and the children's perceptions of their responses to stress in relationship to the grade of the children. The means and standard deviations for the first grade can be found in Table IX.

TABLE IX  
MEAN SCORES OF CHILDREN'S PERCEPTIONS  
IN FIRST GRADE

	Week 4	Week 8	
Experimental	$\bar{x} = 22.3$	$\bar{x} = 21.1$	$\bar{x} = 21.7$
	$s = 3.41$	$s = 3.16$	$s = 3.26$
			$n = 20$
Control	$\bar{x} = 17.5$	$\bar{x} = 19.8$	$\bar{x} = 18.7$
	$s = 2.8$	$s = 3.4$	$s = 3.27$
			$n = 17$
	$\bar{x} = 20.1$	$\bar{x} = 20.5$	
	$s = 3.99$	$s = 3.27$	
	$n = 37$	$n = 37$	

A repeated measures ANOVA (Table X) was conducted to determine if any differences occurred by comparing the

experimental and control group, by comparing the three time periods, and by examining if an interaction existed between the groups and time periods.

TABLE X  
ANALYSIS OF VARIANCE TABLE OF CHILDREN'S  
PERCEPTIONS IN FIRST GRADE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	161.53	1	161.53	11.86*
Error	476.51	35	13.61	
Time	5.50	1	5.50	.74
K x T	56.09	1	56.09	7.51*
Error	261.36	35	7.46	

\*  $p < .05$

As shown in Table X, there was a significant difference between the control and experimental group. There was also a significant interaction that existed between the groups and time periods. The Newman-Keuls range test was used to determine where the significant differences occurred among the four means in grade one. The results of the Newman-

Keuls test indicated that all the mean scores of the children's perceptions, with the exception of the experimental group's fourth week mean score and eighth week mean score (see Table IX), were found to be significant.

The means and standard deviations for the third grade can be found in Table XI.

TABLE XI  
MEAN SCORE OF CHILDREN'S PERCEPTIONS  
IN THIRD GRADE

	Week 4	Week 8	
Experimental	$\bar{x} = 21.9$	$\bar{x} = 21.8$	$\bar{x} = 21.9$
	$s = 2.9$	$s = 1.9$	$s = 2.65$
			$n = 27$
Control	$\bar{x} = 21.0$	$\bar{x} = 21.3$	$\bar{x} = 21.9$
	$s = 2.6$	$s = 2.1$	$s = 2.52$
			$n = 14$
	$\bar{x} = 21.6$	$\bar{x} = 21.6$	
	$s = 2.97$	$s = 2.05$	
	$n = 41$	$n = 41$	



A repeated measures ANOVA (Table XII) was conducted to determine if any differences occurred by comparing the experimental and control groups, by comparing the three time periods, and by examining if an interaction existed between the groups and the time periods.

TABLE XII  
ANALYSIS OF VARIANCE TABLE OF CHILDREN'S  
PERCEPTIONS IN THIRD GRADE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	8.86	1	8.86	1.27
Error	271.75	39	6.97	
Time	0.14	1	0.14	.03
K x T	0.72	1	0.72	.14
Error	198.76	39	5.09	

\*  $p < .05$

As shown in Table XII, there was not a significant difference between the experimental and control groups. There was no significant difference in the groups' mean scores over the eight week period of time. A significant interaction did not exist between the group and time

periods.

The means and standard deviations for the fifth grade can be found in Table XIII.

TABLE XIII  
MEAN SCORES OF CHILDREN'S PERCEPTIONS  
IN FIFTH GRADE

	Week 4	Week 8	
Experimental	$\bar{x} = 21.6$	$\bar{x} = 21.8$	$\bar{x} = 21.75$
	$s = 2.25$	$s = 2.73$	$s = 2.47$
			$n = 20$
-----			
Control	$\bar{x} = 21.6$	$\bar{x} = 21.3$	$\bar{x} = 21.25$
	$s = 1.96$	$s = 2.59$	$s = 2.46$
			$n = 18$
-----			
	$\bar{x} = 21.39$	$\bar{x} = 21.63$	
	$s = 2.10$	$s = 2.70$	
	$n = 38$	$n = 38$	

A repeated measures ANOVA (Table XIV) was conducted to determine if any differences occurred by comparing the experimental and control groups, by comparing the three time

periods, and by examining if an interaction existed between the groups and the time periods.

TABLE XIV  
ANALYSIS OF VARIANCE TABLE OF CHILDREN'S  
PERCEPTIONS IN FIFTH GRADE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Group	4.73	1	4.73	.56
Error	305.75	36	8.49	
Time	1.08	1	1.08	.34
K x T	0.02	1	0.02	.01
Error	113.40	36	3.15	

\*  $p < .05$

As shown in Table XIV, there was not a significant difference between the experimental and control groups. There was no significant difference in the groups' mean scores over the eight week period of time. A significant interaction did not exist between the groups and time periods. Therefore, the stress management curriculum did not make a significant impact on the children's perceptions of their responses to stress in relationship to the grade of

the children. The null hypothesis was accepted.

### Discussion of Results

The researcher believed that there would be a difference between the treatment and the control group, especially over the eight-week period of time. The experimental group's perceptions about understanding and responding to stress should have been enhanced through extended exposure to the treatment. The experimental group's perceptions of their understanding and ability to respond to stress did not occur. Even though a decrease in mean scores was seen for the experimental group, it was not significant. This finding would indicate that the stress management curriculum did not have a significant impact on elementary school children. This is not consistent with the findings of Selterlind and Patriksson (1981).

The reason for the differences could be the age of the subjects. The Selterlind and Patriksson study used subjects who were in junior high and high school, and this study used only elementary school children. Children in elementary school may not be mature enough cognitively to accurately record changes that are occurring.

The amount of time spent each day in relaxation training could be another factor. The time might not have been adequate to induce a change in the children. Five minutes at the end of the class period may have been too brief. Selterlind and Patriksson exposed their subjects to a relax-

ation episode approximately 7 to 12 minutes in length. Richardson et al. (1982) used episodes 15 minutes in length. Taking into consideration the ages of the subjects in this study, the episode length probably should have been lengthened.

Another factor that should be considered is a revision of the curriculum itself. Even though other researchers (Selterlind and Patriksson, 1981; Richardson et al., 1982) used a variety of relaxation techniques in their curricula, younger children may only be able to handle a limited number, one or two. By reducing the number of relaxation techniques, the children could focus on those techniques introduced and possibly learn them well enough to invoke an immediate relaxation response.

It was also expected that there would be a significant difference between the experimental and control groups in the teachers' and parents' perceptions of how the children responded to stress. The teachers were able to see a significant change in the children they observed. However, the parents perceived that no significant interactions existed between the experimental and control groups and the time periods. After studying the results, however, a decrease in the experimental group's mean scores may be observed in the parents' perceptions. This would indicate to the researcher that the parents did see change but the changes were not profound enough to be substantial. One factor that might have hindered the results is the questionnaire that was

used. The questionnaire may not have been sensitive enough to measure overall change. Perhaps the parents should have been asked to complete a one-statement form, as the teachers did, to indicate any change that might have occurred with their child.

The final expectation the researcher had was that the children in the experimental group would be able to significantly lower their resting heart rate after participating in several treatments. This did not occur, but was substantiated in other studies. Richardson et al. (1982) and Ritson (1979) indicated that children were able to significantly lower their heart rate after participating in relaxation episodes.

Three reasons can be cited to explain why significant results were not found. The first reason may be the fact that the children took their own heart rate measurements. Even though the reliability of the children taking their measurement was established, it could be that when young children are asked to take their heart rate over an extended period of time they tend to become haphazard. The second reason could be that the control group activity was too similar to the treatment of the experimental groups. The control group was asked to lie quietly for five minutes and to think pleasant thoughts. The third reason could be that the last heart rate measurement was taken the day before spring break. The dramatic increase in the heart rates could have been caused by the excitement of the impending vacation.

## CHAPTER V

### SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This final chapter will consist of a summary of the study, conclusions, and recommendations for further studies.

#### Summary

The purpose of this investigation was to address the impact a stress management curriculum had on elementary school age children.

Children in first, third, and fifth grades from two schools participated in the study. There were 152 subjects with approximately half of the students participating in the experimental group while the remaining children were assigned to the control group. Children's, teachers', and parents' perceptions were measured by administering questionnaires to each group at the beginning, during the fourth week, and upon completion of the eighth week. Another variable, heart rate, was also taken during the study on days 11, 16, and 21.

The subjects, with classes intact, were randomly assigned to the treatment or control group. Those children

assigned to the treatment group participated in an eight week stress management curriculum. The control group did not receive any treatment and had quiet time during the last five minutes of their physical education class.

### Findings

The data collected in this study were analyzed at the .05 level of significance. Each of the stated hypotheses was examined to see if a difference occurred between the experimental and control groups, between time periods, and if an interaction existed between the groups and time periods. The data yielded the following findings:

1. There was no significant difference in the impact of the stress management curriculum and the children's perceptions of their responses to stress. Hypothesis one was accepted because there was no significant difference between the experimental group's fourth week and eighth week mean scores.
2. There was no significant difference in the impact of the stress management curriculum and the teachers' perceptions of the children's responses to stress. Hypothesis two was rejected because a significant interaction did exist between the two groups and time periods.



3. There was no significant difference in the impact of the stress management curriculum and the parents' perceptions of the children's responses to stress. Hypothesis three was accepted because there was no significant interaction between the two groups and time periods.
4. There was no significant difference in the children's resting heart rates before and after participating in the stress management curriculum. Hypothesis four was accepted because a significant interaction failed to exist between the groups and time periods.
5. There was no significant difference in the impact of the stress management curriculum and the children's perceptions of their responses to stress in relationship to their grade levels. Hypothesis five was accepted because there was no significant interaction between the groups and time periods.

#### Conclusions

In consideration of the results and within the limitations imposed by the design of this study, the following conclusions seem warranted:

1. A stress management curriculum designed for elementary school children that emphasizes understanding the concept of stress and the ability to physically relax does not appear to significantly change the children's perceptions of their abilities to respond to stress.
2. The children's resting heart rates, after exposure to relaxation episodes, do not appear to change significantly as a result of participating in a stress management curriculum.
3. Parents' perceptions of their children's abilities to respond to stress do not appear to change significantly as a result of participating in a stress management curriculum.

#### Recommendations for Further Study

With reference to the purpose, methods, procedures and results of this study; recommendations for further research in this area are as follows:

1. A study similar in design to the present study but one in which the treatment that the children are exposed to be increased from 5 minutes to 10 to 15 minutes daily should be undertaken. It is also recommended that the curriculum includes only two relaxation techniques instead of four.

2. A study similar in design to the present one with the exception of the method in which heart rates were measured should be undertaken. A method that will increase the reliability of the children's scores needs to be used.
3. A study similar in design to the present one that focuses on the behavioral changes of children in stressful situations rather than the children's perceptions of their abilities to respond to stress should be undertaken.
4. A study similar in design to the present one that would identify children who are high trait anxious and low trait anxious to find out if the stress management curriculum is more effective with children who are high trait anxious should be undertaken.
5. A study similar in design to the present study but one in which the curriculum is expanded from the eight week format to a longer one should be undertaken.

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APPENDIX A  
INFORMED CONSENT SHEET



## Relaxation Training for Children

Dear Parents:

The topic of stress management is receiving a great deal of emphasis in today's society. The importance of finding ways to handle and alleviate stress is being recognized by many lay persons as well as health professionals. As you probably realize, children experience many stresses similar to those of adults. It is important for them to learn how to relax so that they, too, can avoid the costly and debilitating effects of prolonged stress. Learning how to physically relax takes time and practice. Relaxation is a skill, which like many other skills, is best learned early in life. Therefore, we are pleased to inform you that an experimental program of relaxation training for children will be conducted at your child's school this spring.

The program will be conducted within the physical education curriculum for a period of eight weeks. During that time, your child's regular physical education teacher will spend an average of five minutes of each period on relaxation concepts and exercises. The children will first be taught about the nature of stress and learn the difference between physical tension and relaxation. They will then learn how to recognize stressed areas within their own bodies. Finally, they will learn and practice several techniques which will aid them in reducing stress and achieving a deep state of relaxation.

To help them understand what happens physiologically when the body is relaxed, the children will be taught how to take their heart rate and hand temperature readings. Warm hands and a low heart rate are both signs of a relaxed body. Periodically, the children will take these measures before and after a relaxation exercise to see how capable they are of achieving full relaxation. Some classes of children also may be photographed and/or videotaped as they perform the relaxation techniques. The resulting tapes and photos will be used only for educational purposes, such as training future groups of students and teachers.

In order to determine whether the program is beneficial to children outside of physical education class, parents and teachers are being asked to fill out brief questionnaires related to their children's general state of relaxation. The questionnaires will be administered before the program begins, half way through its completion (4 weeks) and at the end of the program (8 weeks). Each of the questionnaires should require no more than 5 to 10 minutes of your time to complete. The children also will respond

to brief questionnaires so that their anxiety levels and attitudes toward the program can be surveyed.

To objectively study the effects of the relaxation program, we need to gather data from as many individuals as possible. Therefore, we are asking for your permission to use your child's data (heart rate, questionnaires, and videotapes) in reports of the study. You may be assured of privacy and the fact that no individual will be identified by name in any verbal or written report. The results of the study are intended for educational purposes and may be summarized at professional meetings or in professional journals.

There are no risks involved in this study; indeed, we feel that the children receiving training will be learning a pleasant, life-long skill which will be beneficial in maintaining a healthy lifestyle. If the program is successful, it is likely that all children will receive relaxation training at a later date. Although all children of the designated instructional classes will participate in the instructional program, you or your child may withdraw permission for use of personal data at any time. If you will allow us to use your child's data, please sign the consent form below, fill out the attached questionnaire, and have your child return both forms to his or her physical education teacher as soon as possible (please return the consent form even if you are withholding permission). Feel free to contact either of us at the numbers listed below should you have any questions.

Sincerely,

Susan Miller  
Assistant Professor  
Department of Physical Education,  
Dance, & Leisure Studies  
Washburn University  
(913) 265-

Verneda Edwards  
Instructor  
Department of Health, Physical  
Education, & Recreation  
Wichita State University  
(316) 689-3340

---

Informed Consent

---

name of child	age	sex	classroom teacher
---------------	-----	-----	-------------------

\_\_\_\_\_ I am aware of the nature of the relaxation training program being conducted at my child's school and give permission for my child's data to be used in reports of the study.

\_\_\_\_\_ I do not want my child's data to be included in the study.

\_\_\_\_\_ date

\_\_\_\_\_ parent or legal guardian

APPENDIX B  
QUESTIONNAIRES

Name \_\_\_\_\_ Grade \_\_\_\_\_ School \_\_\_\_\_

Week \_\_\_\_\_ 5 \_\_\_\_\_ 10

## Relaxation Study

## Student Questionnaire

Directions: Read each of the statements below. If you generally agree with the statement, circle TRUE. If you usually disagree, circle FALSE. If you are not sure, or the statement is only true sometimes, circle SOMETIMES.

- |   |      |           |       |
|---|------|-----------|-------|
| 1. I know when I am in a stressful situation.                         | true | sometimes | false |
| 2. I don't enjoy doing the relaxation exercises.                      | true | sometimes | false |
| 3. I can use my relaxation training outside of class.                 | true | sometimes | false |
| 4. I know when my body is tense.                                      | true | sometimes | false |
| 5. This training program helped me feel good about myself.            | true | sometimes | false |
| 6. Taking a deep breath doesn't help me to relax.                     | true | sometimes | false |
| 7. When I take a test I know how to relax for it.                     | true | sometimes | false |
| 8. I can't control how I feel after I make a mistake in sports.       | true | sometimes | false |
| 9. I feel relaxed after doing a relaxation exercise.                  | true | sometimes | false |
| 10. I can do my school work better after doing a relaxation exercise. | true | sometimes | false |

Student's Name \_\_\_\_\_ Grade \_\_\_\_\_ School \_\_\_\_\_ Week 5 10

### Relaxation Study

#### Parent Questionnaire

For the past several weeks your child has been involved in a relaxation training study, either as a participant or as part of a control group. At this time we would like to know whether you have noticed any changes in his or her ability to relax. Please rate your child in the following categories, according to his or her present state of behavior as compared to the behavior observed several weeks ago. If your child is receiving training, please make any comments you wish regarding the nature of the program, your child's reaction to it, the questionnaires, etc. Your participation in this study is greatly appreciated and your suggestions will be valued. Please have your child return this form to his or her physical education teacher within the next two days. Thank you for your cooperation.

Much Less Than Average	Somewhat Less Than Average	Average	Somewhat Greater Than Average	Much Greater Than Average
---------------------------------	-------------------------------------	---------	--	------------------------------------

1. General restlessness					
2. Ability to fall asleep easily					
3. Loudness in talking					
4. "Nervous habits" (nail-biting, hair twisting, drumming fingers, etc.)					
5. Ability to "calm down" when asked to					
6. Frequency of worrying					
7. Tenseness in the face, neck or other body parts					
8. Irritability					
9. Physical complaints					
10. Ability to sleep soundly through the night					

Please write comments on back of sheet.



APPENDIX C

LETTER TO PANEL OF EXPERTS  
AND EVALUATION SHEETS

## LETTER TO PANEL OF EXPERTS

Dear :

We are currently conducting research on a stress management curriculum for elementary school children. We have designed a 10 week program in which the students are educated about stress and practice different techniques that can help alleviate it. We plan to take psychological measurements as well as physiological measurements.

In order to gain some insight as to the perceived benefits of the curriculum, we have developed questionnaires that will be answered by the parents, students and teachers. Will you assist us in this process? We are asking experts from five different fields to help us determine if our questionnaires are measuring what we say they are. Each parent, teacher and student will answer the questionnaire twice. We want to know if the subjects, and their parents and teachers, think they (the subjects) are aware of stress and better able to cope with stressful situations after being exposed to our stress management curriculum.

Please take the time to give us your feedback on the attached questionnaires. Each form has a feedback instrument and room for comments. Feel free to delete or add any information, questions, etc. that you feel will improve the questionnaires.

Susan and I are very excited about this study and the impact it might make. Thank you for taking some time to give us feedback on the questionnaires. We would appreciate if you would return them to me by November 9, 1984. If there are any questions, please call me at (326) 689-3340.

Again, thank you for your time.

Sincerely,

Verneda Edwards  
Elementary Physical Education  
Specialist, Wichita State University

Susan Miller  
Elementary Physical Education  
Specialist, Washburn University



## PARENT'S QUESTIONNAIRE

The parent's questionnaire serves as an indicator of the behaviors the child might display at home. This questionnaire will be completed 3 times during the study by the parents (pre, post and midway through the program).

- |   |     |    |   |
|---|-----|----|---|
| 1. The questionnaire addresses behaviors that could be related to stress. | Yes | No |   |
| 2. The questionnaire is readable for parents.                             | Yes | No |   |
| 3. Too many options are given on the Likert Scale.                        | Yes | No |   |
| 4. "Average" needs to be defined for parents.                             | Yes | No |   |
| 5. "Relaxation" and "stress" should be defined for parents.               | Yes | No |   |
| 6. Directions are explicit enough for parents to understand.              | Yes | No |   |
| 7. Three measurements from the parents are unnecessary.                   | Yes | No |   |
| 8. Record how many measurements you feel would be accurate.               | 1   | 2  | 3 |
| 9. Any additional comments?   |     |    |   |

## SELF-EVALUATION QUESTIONNAIRE

This questionnaire is completed by 2nd, 4th and 6th graders. Its main function is to try to identify those children participating in the study who might have a high anxiety level. This questionnaire will be given before the children begin the stress management curriculum.

Please answer the following questions to indicate the questionnaire's usefulness.

1. Directions are understandable when:
 

a. read by 6th graders	Yes	No
b. read by 4th graders	Yes	No
c. read by teacher for 2nd graders	Yes	No
  
2. Questions address behaviors that could be a result of stress.
 

	Yes	No
--	-----	----
  
3. Questions are readable by:
 

a. 6th graders	Yes	No
b. 4th graders	Yes	No
c. 2nd graders	Yes	No
  
4. If you answered no on any of question #3 could the questions be understood by grade level if read by teacher?
 

	Yes	No
--	-----	----
  
5. Would happy/sad faces work better with 2nd graders?
 

	Yes	No
--	-----	----
  
6. Would there be a tendency for 2nd graders to choose only happy faces?
 

	Yes	No
--	-----	----
  
7. Will the questions give the researchers an idea of the children who might experience high-anxiety?
 

	Yes	No
--	-----	----
  
8. Additional Comments:

STUDENT QUESTIONNAIRE  
(5, 10 Weeks)

This questionnaire is completed by 2nd, 4th and 6th graders. Words such as tense, control and deep breathing are common terminology used in the stress curriculum. Please answer the following questions to indicate the questionnaire's usefulness.

1. Directions are understandable when:
 

a. read by 6th graders	Yes	No
b. read by 4th graders	Yes	No
c. read by teacher for 2nd graders	Yes	No
  
2. Questions address behaviors that could be a result of stress.
 

	Yes	No
--	-----	----
  
3. Questions are readable by:
 

a. 6th graders	Yes	No
b. 4th graders	Yes	No
c. 2nd graders	Yes	No
  
4. If you answered no on any of question #3 could the questions be understood by grade level if read by teacher?
 

	Yes	No
--	-----	----
  
5. Would happy/sad faces work better with 2nd graders?
 

	Yes	No
--	-----	----
  
6. Would there be a tendency for 2nd graders to choose only happy faces?
 

	Yes	No
--	-----	----
  
7. Do the questions indirectly ask the perceived benefits received from the stress study by the child?
 

	Yes	No
--	-----	----
  
8. Additional comments:

APPENDIX D

STRESS MANAGEMENT CURRICULUM

## FEELING GOOD ABOUT ME

### A Relaxation Training Program for Children

Developed by

Verneda Edwards  
Susan Miller

#### Objectives

1. To educate children about the nature and sources of stress.
2. To help children identify situations that cause them to feel unpleasant or stressful.
3. To have children understand and experience the difference between physical tension and relaxation.
4. To help children determine their own state of relaxation through the use of physical, cognitive and affective measures.
5. To teach children several techniques which they can use to induce a relaxation response for the purposes of:
  - a) restoring energy
  - b) preparing for sleep
  - c) alleviating tension and anxiety

#### Brief Overview

Feeling Good About Me is designed to educate children about stress and ways they can cope with stress. The program was developed for use by the elementary physical educator, and is intended as a supplement to the regular curriculum.

Feeling Good About Me can be used with children first through sixth grade. The program consists of twenty activity periods ranging from five to fifteen minutes in length. After basic concepts are introduced, four specific types of relaxation exercises are taught. These techniques include autogenic phrases, guided imagery, progressive relaxation

and stretching. A workbook complements the program by emphasizing cognitive and affective development, as well as recognizing the physical changes that occur during the program.

## FEELING GOOD ABOUT ME!

DAY	CONCEPT	ACTIVITY	EQUIPMENT	TIME
1	What is Stress?	<ol style="list-style-type: none"> <li>1. Explain that for the next 8 weeks that stress and the management of stress will be discussed.</li> <li>2. Show film</li> <li>3. Mini-lecture:               <ol style="list-style-type: none"> <li>a. term stress used often today - everyone experiences it. (Mom, Dad brothers, sisters)</li> <li>b. <u>Defined</u> - response of body to any demand placed on it.</li> <li>c. can be <u>good</u> or <u>bad</u>, depends on how we respond to it! (<u>good</u> when we can make it work for us like getting to school on time, <u>bad</u> when stress makes us feel frustrated, angry and/or sick.</li> <li>d. we need to learn to control these feelings.</li> </ol> </li> </ol>	<p>Filmstrip projector</p> <p>Record player</p> <p>Cassette player</p>	15 to 20 minutes
2	What makes you feel good? bad?	<ol style="list-style-type: none"> <li>1. Mini-lecture:               <ol style="list-style-type: none"> <li>a. sometimes we don't think about what upsets us or what makes us feel good.</li> </ol> </li> <li>2. Complete pages 2 and 3 of the manual (can complete this before coming to class).</li> <li>3. Discuss in class things that make the students feel good or bad.</li> </ol>	<p>Relaxation manuals</p> <p>Pencils</p>	5 min.
3	Tense vs. Relax	<ol style="list-style-type: none"> <li>1. Mini-lecture:               <ol style="list-style-type: none"> <li>a. usually body begins giving us signals when we become stressed. The most common are changes in the way we breathe, tight muscles, cold or clammy hands, knots in our stomachs, etc.</li> </ol> </li> </ol>		5 to 8 minutes

- b. tense - refers to when body parts feel very tight, muscles will feel very hard and area around tightness might start to hurt
- c. relax - refers to when body parts feel comfortable and soft. Area around the muscle area doesn't ache or hurt.
2. Active Participation Hard balls  
Nerf balls
- a. partners - every group has something hard and soft. Call attention to the hard ball. Have them compare the hard ball and the soft ball. Discuss the difference in relation to their muscles.
- b. Individuals - have children lie down. Call out various body parts (shoulder, forehead, lips, arms, legs, stomach). Have them make the areas tense and then relax.
3. Worksheet - on their own have them complete pages 4, 5 and 6 Workbook  
Pencils
- 4 Body Temperature Chalkboard  
5 to 10  
minutes
1. Review - tense vs. relax
- a. mirrors - with partners - have students tense and relax various body parts.
2. Mini-lecture
- a. not only hard muscles tell us if we are stressed. Body temperature also gives us an idea if we are stressed.
- b. usually if hands and feet are cold (for no apparent reason) it could mean a person is nervous or tense about something.
- c. the opposite is true if our hands and feet are warm - that usually means we are relaxed.
- d. why? Tense muscles cause veins, arteries and capillaries to constrict and close off blood flow, relaxed muscles allow blood to flow through.





8	What kinds of things can I do to relax?	<ol style="list-style-type: none"> <li>1. Mini-lecture               <ol style="list-style-type: none"> <li>a. Explain that next few weeks you are going to spend 5 to 10 minutes daily, going through different types of activities and exercises that can help you relax.</li> <li>b. The relaxation exercises that we as a class will do include:                   <ol style="list-style-type: none"> <li>1. progressive relaxation</li> <li>2. autogenic phrases</li> <li>3. stretching</li> <li>4. guided imagery</li> </ol> </li> <li>c. Looking in the workbook, let's discuss the four different types.</li> </ol> </li> </ol>	Chalkboard  Definitions	5 to 7 minutes
9	Progressive Relaxation	<ol style="list-style-type: none"> <li>1. Have students lie on floor and close their eyes.</li> <li>2. Talk through tensing and relaxing parts of the body (face, stomach, bottom, legs, feet)</li> <li>3. If time, discuss how they feel after exercise.</li> </ol>	Exercise A Progressive Relaxation	5 to 7 minutes
10	Progressive Relaxation	<ol style="list-style-type: none"> <li>1. Have children record a positive self-statement.</li> <li>2. Have students lie down and listen to 5 minutes of the tape.</li> <li>3. Have them record their H.R. before and after the exercise.</li> <li>4. Send questionnaires home to parents and teachers. Have students complete questionnaire.</li> </ol>	Tape player Tape B (QR) series Workbook Pencils Questionnaires	10 min.
11	Progressive Relaxation	<ol style="list-style-type: none"> <li>1. Have the children record a positive self-statement.</li> <li>2. Have students lie down and listen to 5 minutes of the tape.</li> <li>3. Have them discuss how they felt during the exercise.</li> <li>4. Record H.R. before and after exercise.</li> </ol>	Tape player Tape C (QR) series Workbook Pencils	5 to 6 minutes
12	Autogenic Phrases	<ol style="list-style-type: none"> <li>1. Have students lie down and talk them through relaxation exercise.</li> <li>2. Record H.R. before and after.</li> </ol>	Relaxation exercise (p. 11, relaxation imagery) Workbook	5 to 6 minutes
13	Autogenic Phrases	<ol style="list-style-type: none"> <li>1. Same as Day 11</li> <li>2. Record H.R.</li> </ol>	Same as day 22	5 min.

14	Stretching Positive Statement	<ol style="list-style-type: none"> <li>1. Have students record a positive self-statement.</li> <li>2. Have students get in a formation that is conducive for teaching.</li> <li>3. Introduce -           <ol style="list-style-type: none"> <li>a. sleep</li> <li>b. triangle</li> <li>c. frog</li> <li>d. pretty eyes</li> </ol> </li> <li>4. Do each exercise 2 times</li> <li>5. Record H.R. before and after.</li> </ol>	Copies of exercises  Workbook Pencils	5 to 6 minutes
15	Stretching	<ol style="list-style-type: none"> <li>1. Have students do following exercises -           <ol style="list-style-type: none"> <li>a. rag doll</li> <li>b. strong man</li> <li>c. kitty cat</li> <li>d. happy feet</li> </ol> </li> </ol>	Copies of exercises	5 to 6 minutes
16	Guided Imagery	<ol style="list-style-type: none"> <li>1. Have students lie down and close eyes.</li> <li>2. Have them listen to program 5 for <u>five</u> minutes.</li> <li>3. Have them record their H.R. before and after.</li> <li>4. Record positive statement also.</li> </ol>	Tape 5 (Peace, Harmony Awareness Tape player Workbook Pencils	5 min.
17	Guided Imagery	<ol style="list-style-type: none"> <li>1. Have students lie down and close eyes.</li> <li>2. Have them listen to program 9 for <u>five</u> minutes.</li> <li>3. Record positive statement also.</li> </ol>	Tape 9 (Peace, Harmony Awareness) Tape Player	5 min.
18	Guided Imagery	<ol style="list-style-type: none"> <li>1. Have students lie down and close their eyes.</li> <li>2. Have them listen to program 11 for <u>five</u> minutes.</li> <li>3. Record a positive statement.</li> <li>4. Record H.R. before and after.</li> </ol>	Tape 11 (Peace, Harmony Awareness) Tape player Workbook Pencils	5 min.
19	Review	<ol style="list-style-type: none"> <li>1. This day is a chance for the children to give you feedback about what they liked and didn't like.</li> <li>2. Have children complete the final pages in their workbook.</li> </ol>	Workbook  Pencils	5 to 8 minutes
20	Relaxation Session	<ol style="list-style-type: none"> <li>1. This day can be used as a <u>finally</u> relaxation session to use whatever exercise the children liked best. The focus is on having the children just relax.</li> </ol>		5 min.

21 Wrap-up

1. Distribute questionnaires to parents and teachers.
2. Have students record their H.R. before and after.
3. Take students through a five minute progressive relaxation session.
4. Have students complete

Workbook  
Pencils  
Questionnaires

10 min.

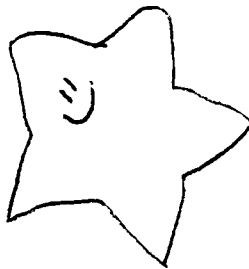
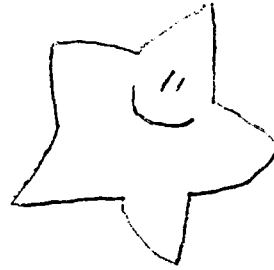
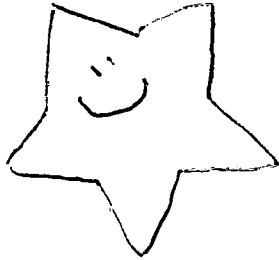
APPENDIX E

LOG BOOK

(Primary Log Book)



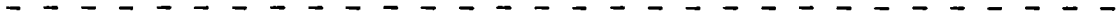
FEELING  
GOOD  
ABOUT  
ME!!



Name \_\_\_\_\_

Grade \_\_\_\_\_

School \_\_\_\_\_

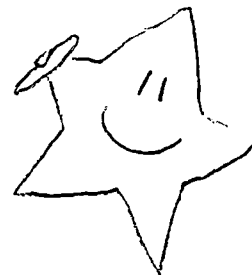


2

Draw two things that make you feel GOOD!

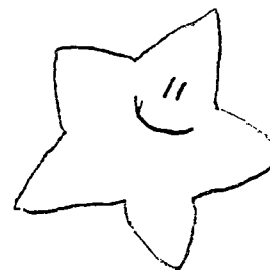
1.

2.



(Intermediate Log Book)

FEELING  
GOOD  
ABOUT  
ME!!



Name \_\_\_\_\_

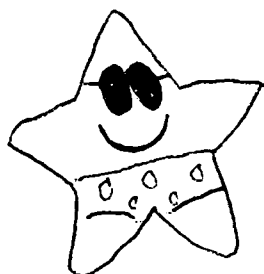
Grade \_\_\_\_\_

School \_\_\_\_\_



2

Things that make me feel GOOD are:



"Nice Tan!"

- 1.
- 2.
- 3.
- 4.



"Good Test!"



Good music!

2  
VITA

Verneda Diane Edwards

Candidate for the Degree of  
Doctor of Education

Thesis: THE EFFECTS OF A STRESS MANAGEMENT CURRICULUM ON  
ELEMENTARY SCHOOL CHILDREN

Major Field: Higher Education

Biographical:

Personal Data: Born in Alameda, California, May 7, 1957, the daughter of Robert R. and Connie K. Litton. Married to Mark B. Edwards on May 28, 1977. Have one daughter, Jessica Diane, born of May 20, 1985.

Education: Graduated from Olathe High School, Olathe, Kansas in May, 1975; received Bachelor of Science Degree in Physical Education from Kansas State University in December, 1978; received Master of Science Degree from Kansas State University in May, 1983; received Doctor of Education Degree from Oklahoma State University, December, 1986.

Professional Experience: YMCA Youth Physical Director, Salina, Kansas, January, 1979 to August, 1980; Physical Education, K - 12, Bennington, Kansas, August, 1980 to May, 1981; Teaching Assistant, Department of Health, Physical Education and Recreation, Kansas State University, August, 1981 to May, 1983; Instructor, Department of Health, Physical Education and Recreation, Wichita State University, August, 1983 to present.

Professional Organizations: Kansas Association of Health, Physical Education, Recreation and Dance; Central District of Health, Physical Education, Recreation and Dance; American Alliance of Health, Physical Education, Recreation and Dance; Central Association of Physical Educators in Higher Education.