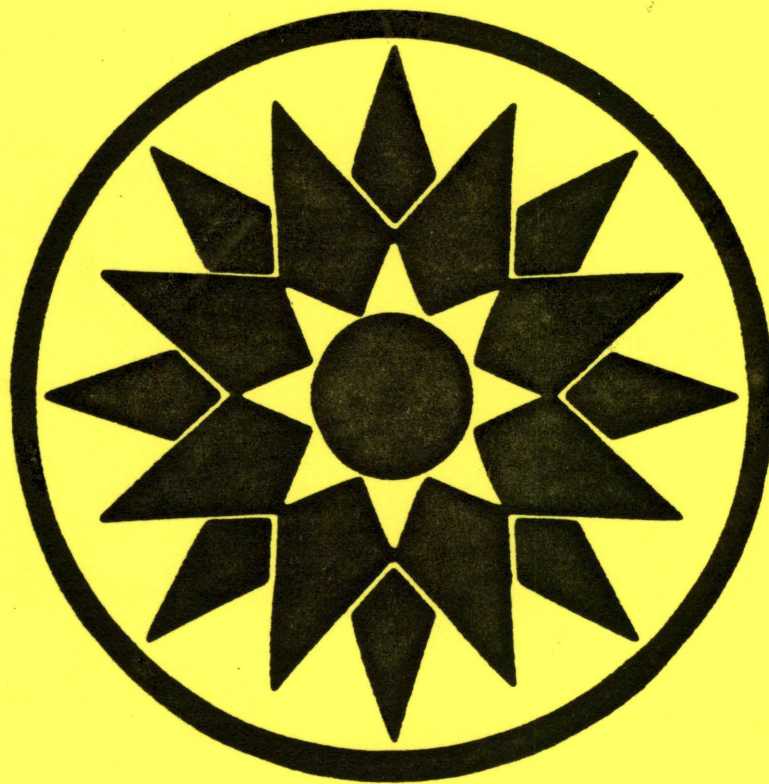


Teacher's Guide

Learning to Cope with Pressure

Apple



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LEARNING TO COPE WITH PRESSURE

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INTRODUCTION

Children and Stress

It is tempting as adults to hold on to the notion that childhood is a carefree time, full of happiness and devoid of worries. Of course, you know from direct experience that that simply is not the case. The extent to which the above is a myth, however, should give us good cause for alarm.

More and more we're realizing how much children's lives are filled with frustrations and pressures that result in stress and tension. Two million school-age children in the United States are taking prescribed medication to counteract the effects of stress and tension. Of course, that statistic doesn't cover the many children who are feeling the effects of stress, but not receiving treatment.

Most schools have some kind of system set up to assess the *physical* health of students. *Emotional* health assessment, on the other hand, has mostly been left to those students whose problems are blatant enough to be disruptive or problematic in the school setting.

Yet studies have shown that even "average" levels of stress can interfere with the learning process considerably--and if that stress builds up, learning may become impossible.

One major symptom of stress is a general feeling of anxiety. Anxious students are restless, have difficulty concentrating, and have a decreased attention span, all of which interfere with learning. Researchers have tested the effect of anxiety on learning, and found that students with high scores on anxiety tests tended to have more difficulty learning new or difficult tasks. Studies have also shown that high-anxiety students are more prone to drop out of school.

Anxiety also leads to a general lack of self confidence, and feelings of insecurity about one's abilities. For students who have a certain amount of difficulty in learning anyway, or even for average students, lack of confidence can result in a self-perpetuating cycle of poor performance.

High levels of stress can also lead to more serious problems such as alcohol and drug abuse, frequent illness, ulcers, cancerous growths, and, eventually, death.

Managing Stress in the School

What can be done about stress--and, in particular, what can be done in the school setting?

A number of experimental programs have been set up in schools that involve teaching students to learn to relax. One such program was conducted in a school district in South Dakota. Students were taught to relax over a six-week period using a biofeedback technique that involved relaxing the muscles and raising hand temperature. Students were tested both before and after the six-week period for anxiety and self-concept (a measure of self-confidence and security). Results showed significant decreases in anxiety and increases in self concept. Subjective comments from students indicated that they felt more confident about their school work and experienced less stress about homework and tests.

Studies with learning disabled children have shown even more dramatic results. These children have considerable muscular tension while performing school work, and tend to have difficulty concentrating. In a study by Carter and Russell, four learning-disabled boys were given biofeedback muscle-relaxation training for ten weeks. The result was a significant improvement in reading, writing, and spelling scores. The boys were also reported to show more self-control, less impulsivity and distractibility, and fewer careless errors.

About this Program

Learning to Cope with Pressure is designed to give you a method and format for helping your students learn to relax and reduce stress. Ultimately this should result in better performance from students, and an increased capacity for learning.

This program integrates the computer with a technique called *biofeedback* in order to teach relaxation skills. *Biofeedback* is a process that uses electronics to detect and amplify internal body activities too subtle for normal awareness. Receiving such information or "feedback" on internal processes can help your students learn to control them. Throughout the day, a person gets constant feedback on their actions, and they adjust their behavior accordingly. If you found, for example, that on a recent test all of your students performed poorly--even those who usually do well--you would know that either the test was too difficult, or that you hadn't prepared the students properly, and you would adjust your teaching accordingly. Without the feedback of the poor test scores, you couldn't be sure of how effective your teaching efforts have been.

The idea of biofeedback is basically the same, except that in this case the feedback concerns biological processes occurring inside the body. *Learning to Cope* monitors a physiological response called *galvanic skin resistance*, or GSR. GSR is a measure of variations in sweat gland activity and skin pore size, both of which are controlled by the sympathetic nervous system. When a person becomes excited, frightened, or disturbed to any degree, the sympathetic nervous system responds by, among other things, increasing sweat gland activity, and thus GSR level also changes.

By learning to regulate GSR level, stress and tension can be reduced, and difficult situations can be handled calmly.

The device included with this program, called a GSR biosensor, is the mechanism that detects changes in GSR level. The GSR is attached to the computer and the two together provide feedback, either visually or using sound.

The manual gives you ideas for using *Learning to Cope* in your classroom, plus suggestions for helping your students in their efforts to relax. The accompanying audio cassette gives one method for relaxation--but remember that different methods work better for different students, and thus you should encourage your students to experiment with a variety of relaxation methods.

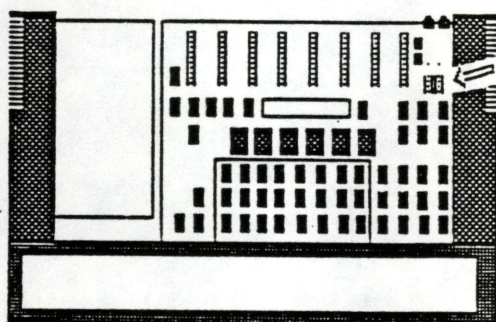
GETTING STARTED

Before using the GSR device with your students, it is recommended that you connect the device and check the battery. If you have a printer connected to your computer, you will want to set the printer (see *Instructions* in the main menu). You should try going through these instructions and using the GSR before your students use it.

HOW TO CONNECT THE GSR

The GSR biosensor plugs directly into the paddle/joystick socket of your Apple II computer. The socket to plug the GSR into is located toward the back right-hand side of your Apple. The GSR connection is slightly different depending on which computer version of the GSR you have. Two different GSRs will be available; one that plugs into an Apple II, II+ or IIe, and one that plugs into an Apple IIe or IIc. See the appropriate diagram below for specific instructions.

For Apple II, II+ or IIe
If you have this connector:



Looking down on inside of Apple II, II+ or IIe: GSR connects to the joystick socket, shown by arrow. Cord should face back of computer.

For Apple IIe or IIc
If you have this connector:



Back of Apple IIe or IIc: GSR connects to joystick socket, shown by arrow.

HOW TO INSTALL AND CHANGE THE BATTERY

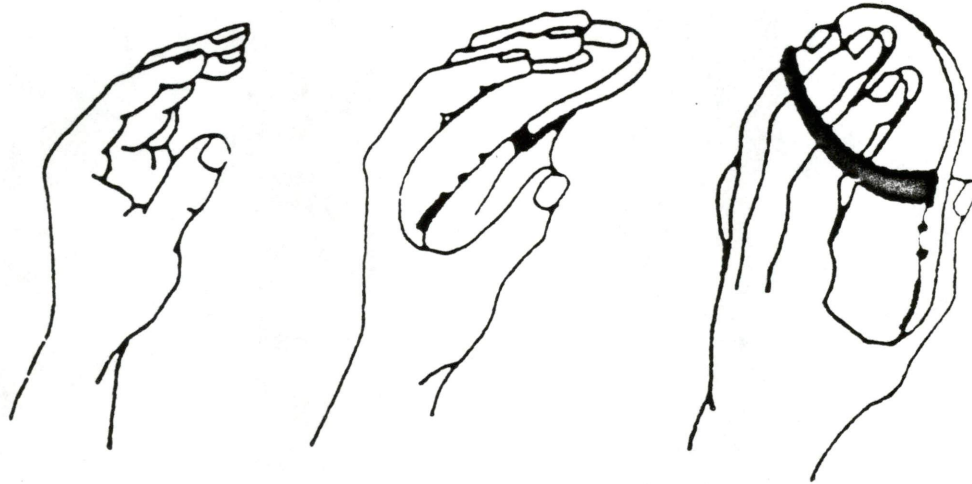
The GSR biosensor uses a 9-volt battery. Once installed, the battery should operate for 6 months to 2 years.

To install the battery, remove the screws on the bottom of the GSR, carefully separating it into halves. Pry off the battery snap and remove the battery. Replace with a 9-volt cell, preferably alkaline, then carefully fit the unit back together. When closing the GSR, turn the screws only until resistance is felt.

To check the battery, go into the *Instructions* option from the main menu, and then select number 3, *Checking the Battery*. You will be instructed to connect the finger plates using a piece of aluminum foil or a paper clip. Once this is done, the computer will indicate whether your battery is good.

HOW TO HOLD THE GSR BIOSENSOR

The GSR has been designed so that its shape conforms to the position of your relaxed hand. Place your index and second fingers onto the stainless steel sensing plates. If you are right-handed, put the GSR on your left hand; if you are left-handed, put the GSR on your right hand. This leaves your dominant hand free to work with the computer. Now pull the black strap over your fingers to keep them in contact with the steel plates. If the strap is too tight, it can be loosened by gently pulling out from the sides to lengthen it.



It is important for your hand to remain relaxed, with your elbow supported. There are at least two positions that allow the biosensor to work and are reasonably comfortable:

- 1) The preferred method is to hold the GSR upside down in your upturned palm, resting on your thigh. Your thumb should be on the side of the GSR, facing up.
- 2) You can rest your arm on a table with your fingers resting on the GSR's steel plates; however, this position is more prone to incorrect readings due to finger movements.

While working with the exercises, try to keep the hand with the GSR motionless, and the pressure of your fingers on the sensing plate constant. This will be especially important to mention to your students, since changes in the pressure on the steel plates change the surface area and can affect the readings.

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LEARNING TO COPE WITH PRESSURE

Press:

1 - Instructions

2 - Physical Stress Test

3 - Psychological Stress Test

4 - Stress Management

5 - CalmPrix

6 - End

Which one? _

Grade level: 4-adult

Reading level: 6th grade (Fry--Instructions)

- Objectives:
1. To teach students about stress: what causes it, how it can be harmful, and ways of controlling it.
 2. To help students become aware of stress as it relates to them individually.
 3. To provide students with a structured program that will teach them relaxation skills that they can apply to their everyday lives.

THE MAIN MENU

If this is your first time using *Learning to Cope with Pressure*, you should begin with the instructions, and work your way down the menu. You will probably not want students to use the instructions sections, check the battery, or set the printer. Read through this information and then explain it to the students.

1--INSTRUCTIONS

This section gives you all the information you need to begin using *Learning to Cope*:

- 1--How to Use this Program
- 2--Overview of Biofeedback
- 3--Checking the Battery
- 4--Setting the Printer

How to Use this Program

In this option, you'll learn basic information about the program. All of the information is covered more extensively in this manual.

Overview of Biofeedback

This option provides you with an overview of biofeedback and its use in treating stress by teaching relaxation.

Checking the Battery

This option contains a test that checks the battery in your GSR biosensor. You should test the battery periodically to make sure you're getting maximum sensitivity from the GSR. If your battery is not working up to par, you will be given instructions on how to change it.

Setting the Printer

This option gives you instructions for setting the printer. You can use the printer to get a permanent record of your results of the following:

- Muscle Tension Test (*Physical Stress Test, option 2*)
- Reaction Time Test (*Physical Stress Test, option 2*)
- Most/Least Favorite Test (*Psychological Stress Test, option 3*)
- Word Association Test (*Psychological Stress Test, option 3*)
- CalmScope (*Stress Management, option 4*)
- CalmBar (*Stress Management, option 4*)

After selecting this option, the following will appear on the screen:

- 1--Set printer type
- 2--Set interface card
- 3--Test card and printer

Begin by selecting *1--Set printer type*. The screen will display a list of printers available. Select the correct printer and press RETURN. You will then return to the previous screen.

Next, select *2--Set interface card*. Again, you'll be provided with a list of available interface cards. After you select one, you will be asked which slot the card is in. Enter the correct number and press RETURN. You will then return to the previous screen.

To be sure you've set the printer correctly, select option 3, *Test card and printer*.

Be sure to set the printer at the outset if you plan to have your students print results. If the printer is not set, your students could lose their results. Once you have set the printer, you need not set it again.

NOTE: You can return to the main menu at any time by pressing the "ESC" key.

2--PHYSICAL STRESS TEST

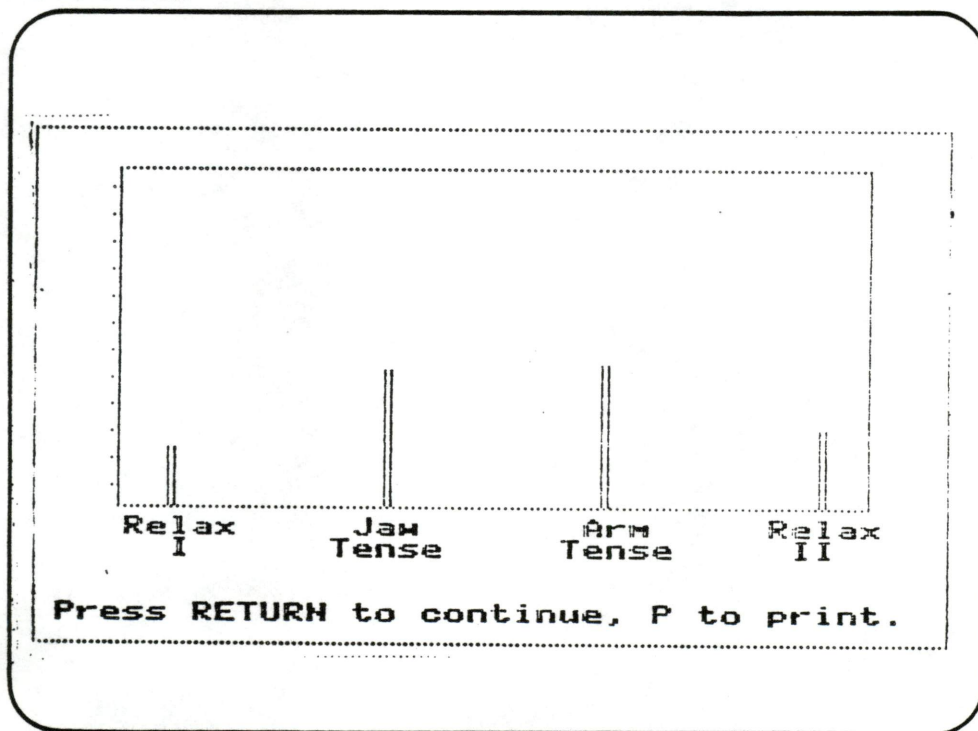
The *Physical Stress Test* shows you how physical activity can affect your GSR level. It is recommended that you take your students through this test so that they are aware of how important it is to avoid any physical activity while using the GSR.

You will be provided with the following choices:

- 1--Muscle Tension Test
- 2--Reaction Time Test

1--Muscle Tension Test

In this test, you will be taken through a series of exercises that alternate relaxation with tensing several muscle groups: the forehead, the jaw, and the hand. Be sure the student is able to relax quietly during the relaxation portion prior to the muscular tensing, so there will be a significant difference in arousal. At the end of the test, a bar graph will present the results of your GSR level at each phase of the test.



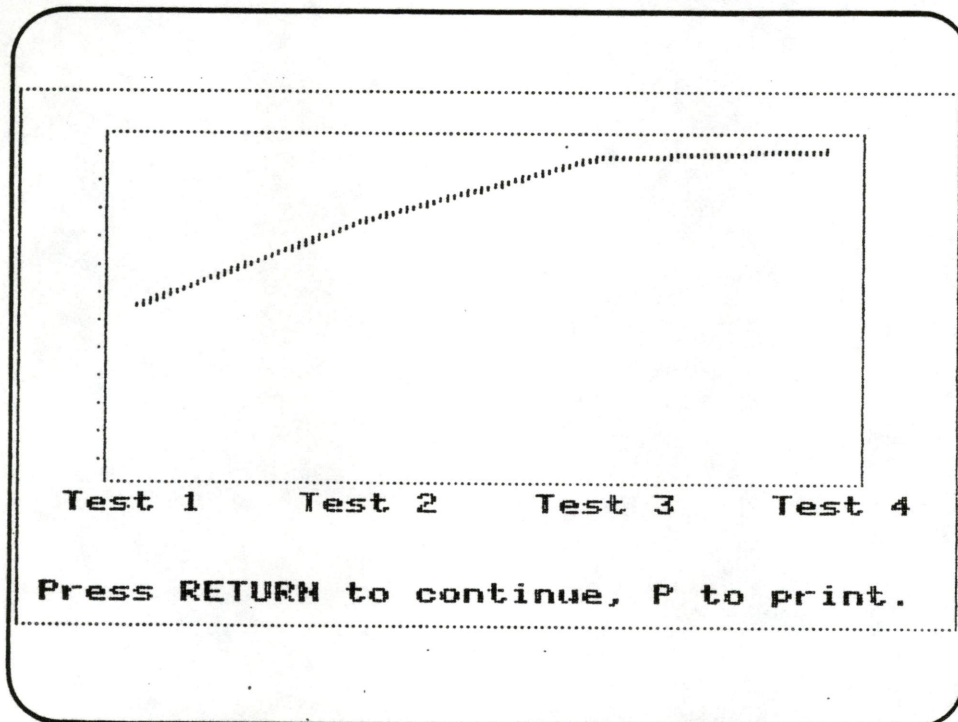
You will probably find that your GSR level increases at those points in the test where you are tensing the various muscles. Muscle tension plays a big part in stress; many people unknowingly tense certain muscles when they are in difficult situations, and that can contribute to their feeling of stress and make it more difficult to relax.

To get a printout of the line graph that depicts your results, press *P*.

REMEMBER: To use the printer, you must set it **BEFORE** you start the test. Refer to the Instructions in the main menu in order to set the printer.

2--Reaction Time Test

In this test, you will be asked to react as quickly as possible to a stimulus on the screen by pressing the space bar. Four test trials are provided, and after each the time it took for you to react will be indicated. After all four trials have been completed, you will be presented with a line graph that shows your GSR level at each of the trials, as shown below:



A reaction time test involves the physical action of hitting the space bar; but it also involves the anticipation you feel while waiting to hit the space bar. Often this anticipation decreases as you adjust to the test, and you may very well see a decrease in GSR level between the first and last trials.

To get a printout of the line graph that depicts your results, press *P*.

REMEMBER: To use the printer, you must set it **BEFORE** you start the test. Refer to the Instructions in the main menu in order to set the printer.

NOTE: You can return to the main menu at any time by pressing the "ESC" key.

3--PSYCHOLOGICAL STRESS TEST

The purpose of the psychological stress test is to show you how just thinking certain thoughts throughout the day--both positive and negative--can cause stress. It will help you become more aware of the "psychological stressors" that exist in your life.

You will be provided with the following choices:

- 1--Most/Least Favorite Test
- 2--Word Association Test
- 3--View Results

1--Most/Least Favorite Test

In this test, you will be asked to create a list of most and least favorite things in your life, in various categories, as shown below:

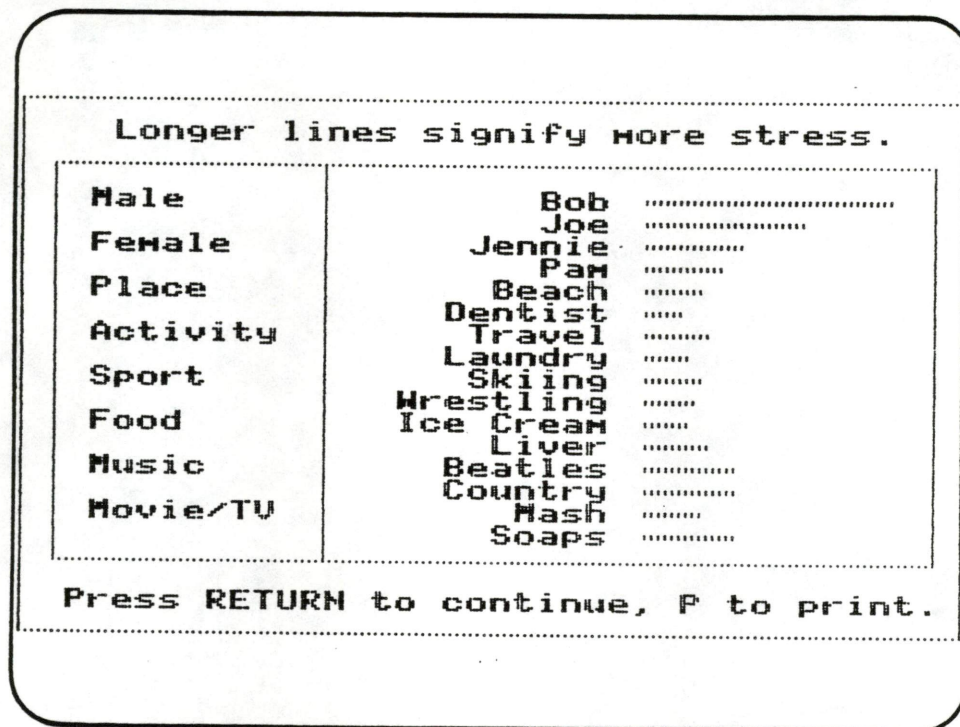
	<u>Most Favorite</u>		<u>Least Favorite</u>	
Male	[Bob]	[Joe]
Female	[Jennie]	[Pam]
Place	[Beach]	[Dentist]
Activity	[Travel]	[Laundry]
Sport	[Ski]	[_]
Food	[]	[]
Music	[]	[]
Movie/TV	[]	[]

Press RETURN for the next word.

It is best to do this alone, with no distractions. As you type in your answer, try to concentrate on that answer; type slowly, leaving your fingers relaxed on the GSR.

After you've typed in your choice, press *RETURN*. You will be asked to wait five seconds before typing in your next answer. During this time, try to relax and clear your mind of any thoughts. If you make a mistake while typing your answer, use the backspace key to erase the answer, and start again.

When you've finished the list, you will get results in the form of a bar graph. The longer the line on the graph, the stronger the emotional response to that word. A sample graph is depicted below:



Keep in mind that an emotional response may be either positive or negative; thus, life situations such as marriage, a new car or house, or a baby can be just as stressful as losing a job, missing a plane, or having financial difficulties. It is up to the student to recognize by self-questioning whether the responses are positive or negative.

Remember, there are no right or wrong answers to this test. You'll get the best results if you are spontaneous in your answers.

NOTE: Categories like *Favorite Place* do not necessarily refer to geographical locations. Answers such as *dentist's office* or *movie theater* are perfectly acceptable.

To get a printout of the bar graph that depicts your results, press *P*.

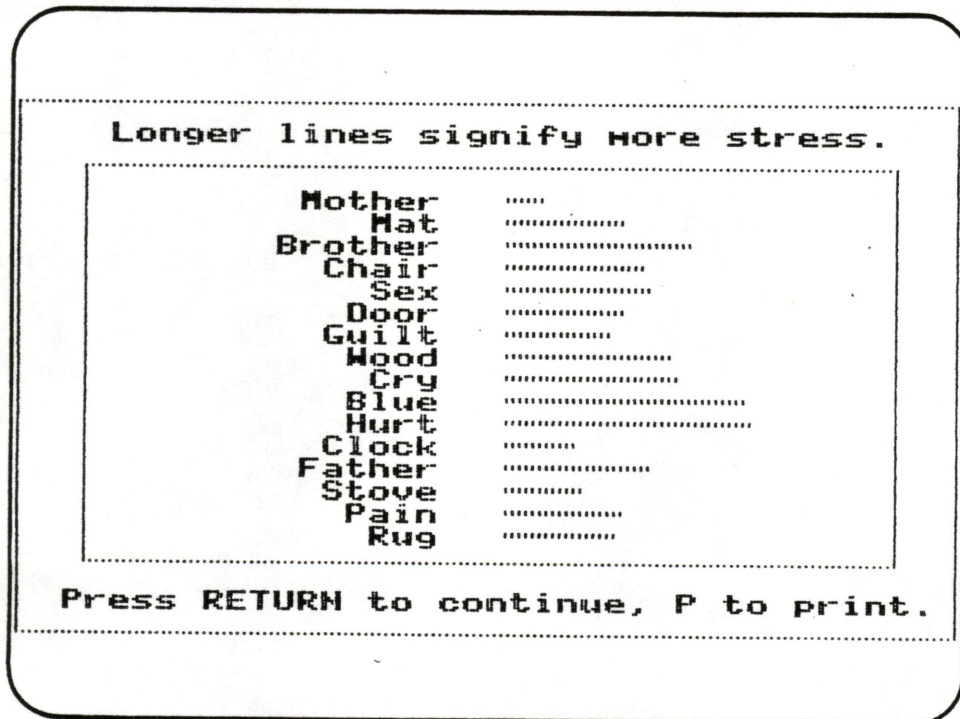
REMEMBER: To use the printer, you must set it **BEFORE** you start the test. Refer to the Instructions in the main menu in order to set the printer.

2--Word Association Test

In this test you will be presented with 16 words, one at a time. You have the option of using your own word list, rather than using the list in the computer. To do so, answer *yes* at the end of the instructions when the computer asks if you want to make your own list. You cannot enter more than 16 words. At this point, you can specify either that your words appear randomly, or in the order that you entered them. After you've made your list, the test will begin. (Note: the program will not save your word list once you leave the *Psychological Stress Test* portion of this program; thus, be sure to make a note of your list if you wish to use it again with another student.)

As each word appears, focus in on the word, and try not to think of anything else. After the word disappears, blank your mind of all thoughts until the next word comes up. Be sure to leave your fingers relaxed on the GSR. You can break out of the test and view your results at any time by pressing *R*.

At the end of the test, you will get your results in the form of a bar graph. The longer the line, the stronger the emotional response to that word. A typical graph is depicted below:



To get a printout of the bar graph depicting your results, press *P*.

REMEMBER: To use the printer, you must set it **BEFORE** taking the test. Refer to the Instructions option in the main menu in order to set the printer.

3--View Results

As long as you are still working in the *Psychological Stress Test* option, you can view the lastest results for either the *Most/Least Favorite* or *Word Association* tests. After selecting 3, you will be asked which test results you wish to view. Select the appropriate test, and the bar graph of your results will be shown. At this point you can print the results if you wish.

The program will not save your results indefinitely. Thus, if you leave the *Psychological Stress Test* option, or turn off the computer, you will not be able to view your results again later.

NOTE: You can return to the main menu at any time by pressing the "ESC" key.

4--STRESS MANAGEMENT

This portion of the program provides various types of feedback to use in relaxation sessions. Because everyone is different, it is worth experimenting with the different types of feedback in order to find out what works best for each individual student.

Three types of feedback and instructions are available:

- 1--Overview
- 2--CalmPatterns
- 3--CalmScope
- 4--CalmBar

1--Overview

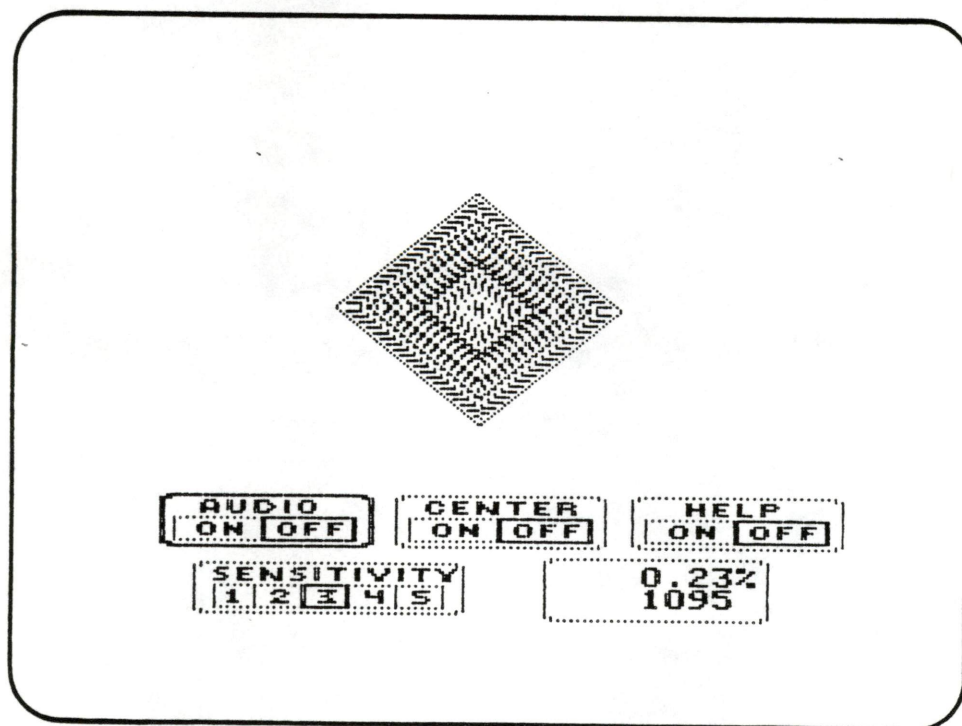
In the overview, you'll get basic instructions and information about learning to relax, using the various forms of feedback offered. For more detailed instructions, refer to this manual.

2--CalmPatterns

CalmPatterns provides feedback in the form of two visual patterns that get larger or smaller in response to GSR level. You can select which pattern you wish to use:

- 1--Diamond
- 2--Hexagon

Depicted below is a sample of the diamond pattern:



At the bottom of the screen are a number of control options. *To move from option to option, press the FIRST LETTER of the option you want; to move within each option, use the ARROW KEYS.*

The Control Options

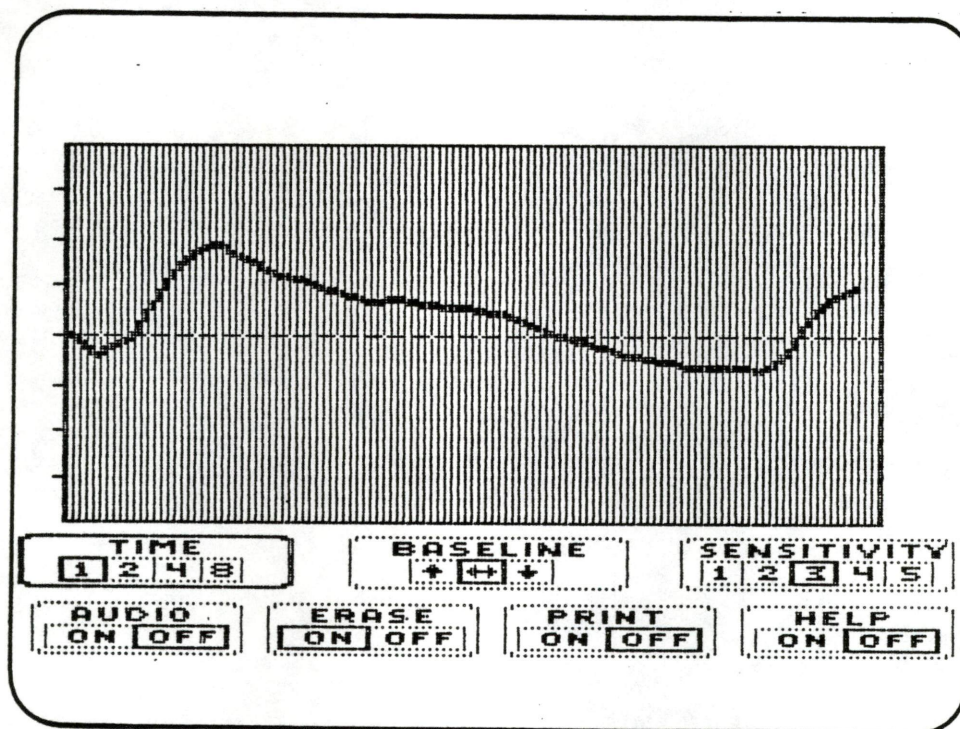
- AUDIO: If you choose, you can receive feedback in the form of a rising and falling tone. The tone rises in pitch as your stress level increases; the pitch gets lower as you become more relaxed.
- CENTER: If the pattern on the screen gets so large that it stops responding, or if the pattern decreases to the point of disappearing from the screen, you can use this option to "center" the pattern back to the size it was at the start.
- SENSITIVITY: This option lets you control the degree of responsiveness of the pattern with respect to your physiological changes. *Five* is the most sensitive, *one* is the least. If you find that you are getting very large changes in the pattern, or that it's reaching its minimum and maximum size too quickly, you should lower the sensitivity. If very little change is occurring, increase the sensitivity.
- HELP: This option gives you a concise reference guide to the control options.
- GSR % CHANGE: This figure gives you more quantifiable data as to your progress in relaxing. You can use it to make comparisons between or within sessions.

3--CalmScope

CalmScope produces a line graph of your GSR level over time. The trace rises as your stress level increases, and falls as your stress level decreases. (Keep in mind that there is a slight delay in the action of the trace as compared to your actual response.)

Because you can see your results over time, you will be able to track your attempts to relax, and compare different strategies for relaxation.

Depicted below is a sample graph:



At the bottom of the graph are a number of control options. *To move from option to option, press the FIRST LETTER of the option you want; to move within each option, use the ARROW KEYS.*

The Control Options

TIME: The trace on the graph initially takes a little less than a minute to complete. You can increase this time period to 2, 4, or 8 minutes. By using larger time periods, you will be able to see trends in your responses.

BASELINE: At times the trace may go off the graph--using this option will enable you to bring the trace back. *BASELINE* ^ will bring the trace to the upper third portion of the graph; *BASELINE* v will bring the trace down to the bottom third portion of the graph; and

BASELINE <--> will put the trace at the center of the graph. You may need to use this option several times before the trace finally stabilizes at the starting place you desire.

SENSITIVITY: This option lets you control the degree of responsiveness of the trace with respect to your physiological changes. *Five* is the most sensitive, *one* is the least. If you find that you are getting very large changes in the trace, or that it keeps going off the graph, you should lower the sensitivity. If very little change is occurring, increase the sensitivity.

AUDIO: If you choose, you can receive feedback in the form of a rising and falling tone. The tone rises in pitch as your stress level increases; the pitch gets lower as you become more relaxed.

ERASE: With this option, you can keep the previous trace on the graph as a new trace begins. This will happen when you select *ERASE OFF*. Thus you can see your progress over a longer time.

PRINT: You can print your results by using this option. *Remember: YOU MUST SET THE PRINTER before you can use this option (see Instructions option in the main menu).*

HELP: For a concise reference guide to all control options, select the *HELP ON* option. When you're done, you can return to your graph without losing any data.

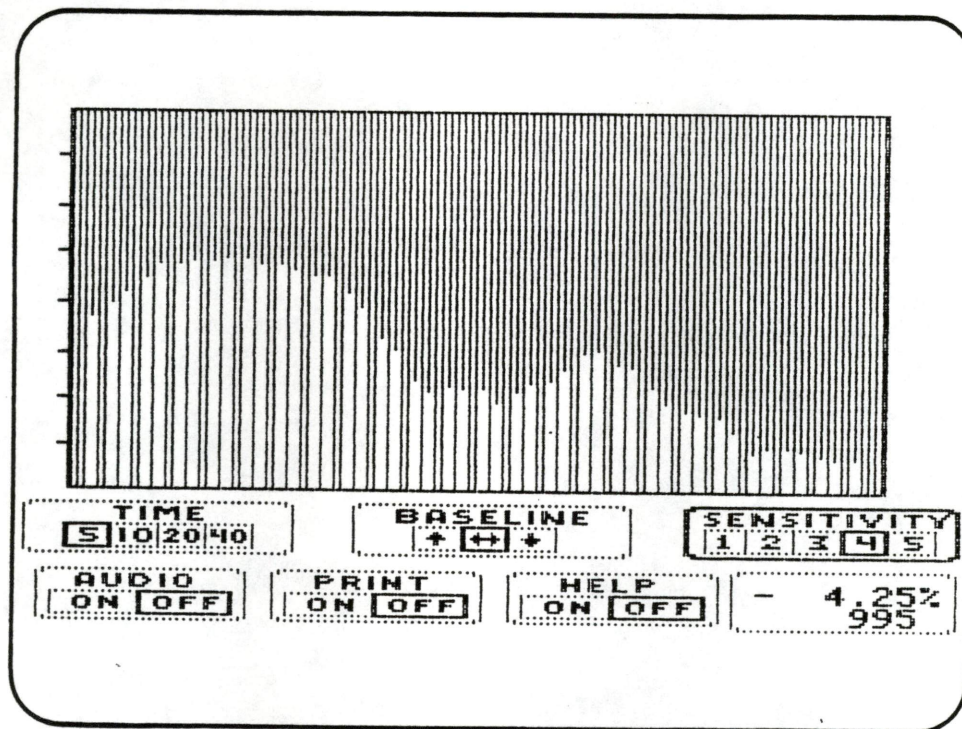
PRESSING R: If you want data that is more quantifiable, to be used for comparison during or between sessions, press *R*. At the bottom right-hand corner of the screen you will get a number proportional to skin conductivity. The higher this "GSR value," the higher your stress level. You'll also get a percent change figure. Both figures change instantaneously with changes in your response.

PRESSING W: Pressing *W* will pause the program, leaving the display. This is especially useful for studying the results of a relaxation session as you approach the end of the screen. Pressing *W* again will continue the program.

4--CalmBar

CalmBar provides you with a bar graph of your GSR level over time. The advantage of *CalmBar* is that you can select even longer time periods--up to 40 minutes--for the graph to complete, while at the same time getting instantaneous information on changing stress levels by the height of the bars. Thus you can follow trends in your response for an even longer period of time. Each bar represents your average level of stress over a variable time period (depending on the amount of time you select for the graph to complete.) The higher the bar, the higher your level of stress; shorter bars represent lower levels of stress.

A sample graph is depicted below:



At the bottom of the graph there are a number of control options. *To move from option to option, press the FIRST LETTER of the option you want; to move within each option use the ARROW KEYS.*

The Control Options

TIME: The graph initially takes 5 minutes to complete. You can increase this time period to 10, 20, or 40 minutes. By using larger time periods, you will be able to see trends in your responses.

- BASELINE:** At times the bar may go off the graph--using this option will enable you to bring the bar back. *BASELINE* ↑ brings the bar to the upper third portion of the graph; *BASELINE* ↓ brings the bar to the lower third portion of the graph; and *BASELINE* <--> brings the bar to the center of the graph. You may need to use this option several times before the bar finally stabilizes at the starting place you desire.
- SENSITIVITY:** This option lets you control the degree of responsiveness of the graph with respect to your physiological changes. *Five* is the most sensitive, *one* is the least. If you find that you are getting very large changes, or that the bars keep going off the graph, you should lower the sensitivity. If very little change is occurring, increase the sensitivity.
- AUDIO:** If you choose, you can receive feedback in the form of a rising and falling tone. The tone rises in pitch as your stress level increases; the pitch gets lower as you become more relaxed.
- PRINT:** You can print your results by using this option. *Remember: YOU MUST SET THE PRINTER before using this option (see Instructions option in the main menu).*
- HELP:** For a concise reference guide to all the control options, select the *HELP ON* option. After you're done, you can return back to your graph without losing any data.
- GSR %CHANGE:** If you want data that is more quantifiable, to be used for comparison during or between sessions, press *R*. At the bottom right-hand corner of the screen you will get a number proportional to skin conductivity. The higher this "GSR value," the higher your stress level. You'll also get a percent change number. Both figures will change instantaneously with changes in your response.
- PRESSING W:** Pressing *W* pauses the program, leaving the display. This is especially useful for studying the results of a relaxation session as you approach the end of the screen. Pressing *W* again will continue the program.

NOTE: *You can return to the main menu at any time by pressing the "ESC" key.*

5--CALMPRIX

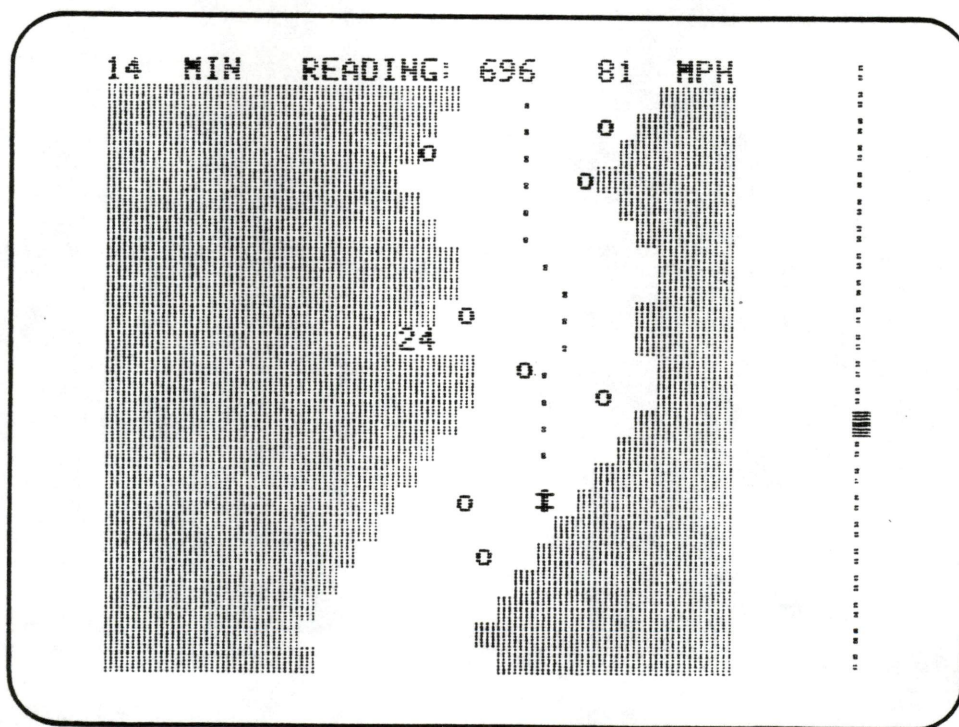
CalmPrix is an auto-racing arcade game that is both fun and helpful in teaching you to manage stress. The speed of your racing car is affected by your GSR level--the more relaxed you are, the faster you will go. Of course, the faster you go, the harder it gets, and the harder it gets, the harder it is to stay calm! Thus mastery of the game means mastery of your ability to keep your stress level low under challenge and pressure.

Object

The goal of the game is to complete the course hitting as few potholes as possible, and going off the road as little as possible. You will be scored according to these factors.

Method of Play

Depicted below is your course:



The small circles scattered all over the road are potholes, and these you must try to avoid. If you hit one, you will hear a blip.

At the right of the track is your *CalmPrix* stress indicator. Notice what happens when you hit a pothole or go off the road.

There are 9 levels of play, with 1 being the easiest. The difference between the levels is based on sensitivity--that is, how much your GSR level affects your speed. In level 1, your speed will change very little--only with large changes in GSR level. In level 9, however, your speed will change with even slight changes in GSR; thus you must be more in control. Start with an easier level (level 5), and work your way up to the most difficult level.

If you are getting too stressed playing the game by the normal rules, try something different. Try deliberately hitting the potholes--without running off the road. You may get a poor driver rating at the end, but it will help you desensitize your fear of potholes; thus in the future you'll be able to avoid the potholes without feeling as stressed.

Your final score is a Class Driver rating from 1-9, with 1 being the best score.

NOTE: You can return to the main menu at any time by pressing the "ESC" key.

USING *LEARNING TO COPE WITH PRESSURE* IN THE CLASSROOM

On the following pages you'll find suggested classroom activities, with an outline for a *Relaxation Training Program* for your students.

Lesson 1 outlines a classroom discussion on stress--what causes it, why it can be harmful, and how to help students become more aware of stress as it relates to their lives.

Lesson 2 outlines a classroom discussion on relaxation--what it feels like to be completely relaxed, why relaxation is so important, and various methods for achieving deep relaxation. Using the accompanying cassette tape, you can take students through a relaxation exercise.

Lesson 3 provides you with a format for using *Learning to Cope with Pressure* over a period of 4 weeks to teach students to relax. A preliminary lesson is outlined, and a comprehensive program is given that you should be able to adapt to nearly any setting. Followup activities are also included.

Lesson 4 incorporates the *Psychological Stress Test* (option 3 on the main menu) into a classroom exercise that is both fun and instructional.

LESSON 1. A CLASSROOM DISCUSSION ON STRESS

A. Begin the discussion by putting the word *STRESS* on the board, and asking your students to define the word.

1. Explain that stress is basic to life, that everyone experiences stress to some degree.
2. Discuss the dangers of stress--its effect on both emotional and physical health.
3. Note that different people respond to stress differently--that some people can tolerate more stress than others.

B. Ask students to brainstorm a list of possible causes of stress. These causes may be related to them as individuals, or to people in general.

A list of causes created from several brainstorming sessions with students is provided on page 26 as a guide. Your students may come up with different causes as well.

C. Discuss some of the reactions to stress. Note that stress gets displayed in different people in different ways, but that there are certain basic signs. Have students create a list on the board.

A list of some stress reactions is provided on page 26 as a guide.

D. There are many ways we can deal with stress, some of them positive, some of them negative. Put up two columns on the board, *Positive* and *Negative*, and have students come up with lists for each heading. For example:

POSITIVE

Jogging
Relaxation Exercises

NEGATIVE

Overeating
Drug Abuse

Page 27 provides you with a more extensive list. Be sure to emphasize the importance of a good diet, plenty of exercise, and adequate sleep in controlling stress.

E. Once we are able to recognize our own stress patterns, we are better able to control the stress in our lives. Have students fill out the *Individual Stress Chart* on page 28. It will help them to be more aware of what causes stress in their lives, and what they can do about it.

To help them get started, fill out a sample entry as follows:

<i>CAUSE(S)</i>	<i>SIGN(S)</i>	<i>POSITIVE ACTION(S)</i>
Anxiety about a test	Tense shoulders Irritability	Do relaxation exercises Leave adequate time to prepare for the test Get plenty of rest the night before

Have students fill out the chart in class, but emphasize that the charts are for their own use only, and thus they should be as honest as possible.

Students should try to come up with current as well as past or potential causes of stress; encourage them to list at least two positive actions for every stressor.

CAUSES OF STRESS

Tests, grades, not having work done
Meeting new people
New surroundings
A new activity or game
Unfamiliar circumstances
Conversation with an adult
Before competing or performing
Being called on in class, or reporting
before a group
Dentist, doctor
Parents out
Timelines
Waiting, hurrying
Death, disease, pain
Money
Others not listening
Talking back
Conflicts, choices
Apathetic students

Being in trouble
Smells, colors, sounds
Someone arguing or fighting
Being alone
Scary movies
Babies
Weather, disasters
Others staring
Hot places
Going out with the opposite sex
Lonesomeness, fear
Danger
Hunger
Embarrassment, mistakes
Haircuts
Reactions of others
Planning, anticipation
Driving in traffic

STRESS REACTIONS

Tension and migraine headaches
Scalp prickles
Clenching of teeth (bruxism)
Facial tics
Tense neck, shoulders, and chest muscles
Trembling or shaking
Backache, sore/aching muscles, cramps
Tiredness, restlessness, fatigue
Excessive movement, nervous mannerisms
Hives, allergic reactions
Excessive perspiration
Blisters on joints
Stammering
Stuttering
Biting fingernails, wringing fingers
Unable to focus attention
Forgetting, mental blocking
Drug abuse
Excessive smoking, drinking, eating
Loss of appetite
Depression

Dripping sinuses
Dryness of mouth
Tight vocal cords
Heartburn
Nervous stomach, nausea
Diarrhea
Constipation
Blushing, blotching
Palpitations
Rapid respiration and pulse
Hyperventilation
Holding of breath
Cold, clammy hands
Blackout, fainting
Aggressiveness
Hostility
Anxiety
Guilt
Frustration
Early or late menstruation
Focusing attention on trivial
thoughts, fears, and phobias

DEALING WITH STRESS

Positive

Jogging (or any exercise)
Relaxation exercises
Good diet
Plenty of sleep
Asking for assistance with a problem
Talking things over with friend or relative
Working out solutions to a problem
Engaging in enjoyable/relaxing activity
Taking a vacation

Negative

Overeating
Drug abuse
Alcohol abuse
Chain smoking
Skipping school
Aggression towards others
Ignoring /blocking out a problem
Delinquent behavior (shoplifting,
breaking windows, etc.)

NOTE: The positive ways of dealing with stress that students should use in their daily charts can and should be more specific than the above; use the list as a general guideline.

INDIVIDUAL STRESS CHART

<i>Cause(s)</i>	<i>Sign(s)</i>	<i>Positive Action(s)</i>
1. _____	_____	_____
_____	_____	_____
_____	_____	_____
2. _____	_____	_____
_____	_____	_____
_____	_____	_____
3. _____	_____	_____
_____	_____	_____
_____	_____	_____
4. _____	_____	_____
_____	_____	_____
_____	_____	_____
5. _____	_____	_____
_____	_____	_____
_____	_____	_____
6. _____	_____	_____
_____	_____	_____
_____	_____	_____

LESSON II. A CLASSROOM DISCUSSION ON RELAXATION

- A. Discuss the importance of being able to relax in reducing stress and tension.
 1. Note the problems that arise in people who are unable to relax--ulcers, migraines, drug and alcohol abuse, backaches, cancerous growths, hypertension, cardiac difficulties, premature aging, and even death.
 2. Explain how a tension headache develops. Tensing shoulder, head and neck muscles in response to stress decreases blood flow to the head muscles. These muscles fatigue like any muscle and produce pain. It's important to relax frequently before the critical point is reached which produces the tension headache.
 3. Have students describe what it feels like to be totally relaxed--both the physical and psychological sensations.
- B. Ask students to discuss the various ways they have of relaxing.
- C. Discuss the importance of deep, easy breathing in being relaxed; take students through a step-by-step deep breathing exercise (see next page).
- D. Discuss several methods for learning to relax at will. Be sure to emphasize that different techniques work better with certain people than others--there is no one "right" way.
 1. Visual Imagery (see page 31).
 2. Progressive Exercises (see page 31).
- E. Play Side B of the accompanying cassette tape. This will take your students through a brief relaxation exercise. Afterwards have students discuss their experiences.

Deep Breathing

Breathing is a natural, unconscious process; however, tension and emotional conflicts can interfere with the natural process of breathing and thus disturb breathing patterns and limit air intake.

Even when we're not experiencing stress, most of us tend to breath very shallowly, only partially filling the lungs with air. This is an inefficient way to intake air.

Optimally, the process of breathing should utilize the whole upper torso--the abdominal muscles, the diaphragm (the large muscle that separates the lungs from the abdominal cavity), and the ribcage. When breathing in, the diaphragm descends and contracts, allowing the lungs to fill with air. The abdominal muscles and ribcage expand outward, also to let the lungs fill with air. Relaxed breathing, thus, is predominantly abdominal breathing.

Guide your students through the following deep breathing exercise:

1. First relax your neck, face, and shoulders as much as possible. Any tension in those areas can interfere with deep breathing.
2. Take a slow, deep breath, breathing the air in through your nose. Concentrate on not raising the shoulders as you breath in.
3. Imagine that your lungs are a balloon, expanding in all directions as you fill them with air. Picture the air first travelling down to the very bottom of your lungs and filling that area, then going to the middle, then to the top of your lungs, completely filling the lungs with air. Your stomach and ribcage will push out, your shoulders will move back.
4. When you feel like your lungs are completely filled with air, try to hold the breath for several counts. Be sure your face and neck are relaxed.
5. Now exhale *slowly* through puckered lips, emptying first the air in your upper lungs, then middle, then lower lungs. Use a final, gentle squeezing motion with your abdomen to push every last bit of air out of your lungs.
6. Practice this exercise at home, building up to inhaling on the count of 6, and exhaling on the count of 12.

Two Relaxation Techniques

Visual Imagery

This technique involves imagining that you are in a setting--such as the beach, camping--that you find totally relaxing. As you begin to get in touch with every detail of the experience, your body will respond as if you were actually experiencing it, and you'll start to relax.

Below is an example of the *Visual Imagery* technique, using a beach setting. This exercise works best if each student writes out his or her own scenario, then tape records it and listens back to it over and over again.

1. You're lying on a warm, sandy beach on an island very far away from home.
2. The sun is seeping into every inch of your skin. A gentle breeze is blowing, and it keeps you feeling cool and refreshed.
3. All you hear is the rhythmic motion of the waves, and seagulls crying above you.
4. You're sipping a tall, cool drink, and it tastes so delicious.

You could continue in that vein, or simply keep repeating the above over and over. Encourage students to come up with their own scene that they find particularly relaxing.

Progressive Exercises

Progressive exercises involve focusing in on and relaxing every muscle group, one at a time. This is done by either tensing and then relaxing each muscle, or by simply concentrating on that muscle to try to make it feel relaxed. (Note: The former should not be used while using the GSR, as tensing the muscles will interfere with GSR readings.)

Instructions for this exercise would be as follows:

1. Sit in a comfortable chair, in a position that leaves all your muscles relaxed and free.
2. Now focus in on the muscles in your left foot. Relax them totally, until they feel warm and heavy.
3. Now concentrate on your left ankle. Feel it going limp as tension drains out of it.
4. Focus in on your shin, and the muscles surrounding it. Picture the muscles relaxing, with not even a little bit of tension left in them.

You would continue on in this way, covering both feet, legs, arms, as well as hips, buttocks, shoulders, neck, and facial muscles. Emphasize the importance of not going on to a new muscle group until the the group you are concentrating on feels totally relaxed. This exercise often works better without taped instructions, but rather with the student thinking the instructions in their mind. When done that way, students can go at their own speed.

LESSON III. A RELAXATION TRAINING PROGRAM FOR YOUR STUDENTS

The following section outlines a format for using *Learning to Cope with Pressure* to help your students learn to relax. Much of it takes place outside the classroom. Because schools vary in the number of students, computers, and amount of computer time available per student, you may have to make scheduling adjustments to accommodate these variations. The basic structure of the program, however, should be applicable in almost any school setting.

The purpose of this program is to enable students to be able to relax any time, anywhere, on their own. Although we were all born with the ability to relax, for most people that ability must be re-learned. Even for those individuals who feel competent at relaxing, there is usually a good deal more they could learn in order to achieve an even deeper state of relaxation.

It is advised that you spend several class periods preparing students, using Lessons I and II. This gives students a sense of context, and helps them realize the importance and meaning of the program they are about to begin.

You may feel the need before starting the program to inform parents about it, and get permission from them. On the next page, you'll find a sample permission form that describes the basic program.

An ideal way to use this program is to offer it as a "minicourse" that students can sign up for in the place of study hall or free time, one or two days per week. If you are integrating the program into an existing class--health, physical education, science--you may find some students unwilling or uninterested in going through the program. Since the most classroom time taken in the program involves the preliminary discussions of stress and relaxation, which would be beneficial even to those not interested in completing the program, it is best *not* to force uninterested students into completing the program.

Stress Management Permission Form

Children today are growing up faster than ever--they are expected to accept more responsibility and are subjected to more pressures at earlier and earlier ages. Because of this, they experience stress at much younger ages than before.

Just as it is important for students to be conscious of their physical health, it is also important that they be aware of their emotional health--that they are able to recognize the signs of stress, and can combat the negative effects of stress.

We are conducting an exciting new program that will help your children fight stress. The program involves using a method called *biofeedback* to teach students how to relax deeply and completely. Using the Apple microcomputer and a sensing device called a GSR Biosensor (the students' fingers rest on this device), students' stress levels are monitored, and feedback is given on their efforts to relax. This feedback is critical in helping them learn what to do both mentally and physically to achieve deep relaxation.

The program involves several 10-15 minute sessions per week, and covers a period of approximately four weeks.

A number of other schools have conducted similar programs, and the results were very positive. Students experienced less tension and anxiety, were able to concentrate better, and thus were more receptive to learning.

We feel the experience will be a valuable one for your child, and encourage your support.

(Teacher's Name)

Please detach and return.

(Student's Name) has my permission to participate in the
Stress Management Program described above.

(Date)

(Signature)

A. Preliminaries

1. Play side 1 of the accompanying cassette tape. It gives an overview of biofeedback in general, and more specifically discusses GSR.
2. Demonstrate the proper way of holding the GSR, and of hooking it up to the computer. It is best if the GSR can remain hooked up to a designated computer for the entire program, since the prongs on the plug are delicate and bend or break easily.
3. Using a volunteer, go through the *Physical Stress Test* (option 2 from the main menu) to demonstrate how the GSR responds and how physical activity can affect students' attempts at relaxation. Encourage students to try the *Physical Stress Test* on their own.
4. Go to option 4 on the main menu, *Stress Management*, and using another volunteer demonstrate the types of feedback available, including the tone feedback. Stress the fact that each one of them will no doubt prefer one type of feedback over another, and that they should use the type that feels most comfortable.
5. Briefly outline the 4-week program, including how much time is required each week. To be sure that students get to train the proper amount of time each week, it is advised that you have a signup sheet with all the times the computer(s) is available, and have students sign up for 15 minute slots. Do this at the beginning of each week.
6. Give the instructions for Week 1.

B. Four-Week Training Program

This program covers 4 weeks, based on the assumption that students will be able to train three times per week for approximately 15-20 minutes. If such time is not available for all students in the class, two options are available:

1. Have students spend less time each week, but increase the number of weeks in the program.
2. Divide students in two groups, and train one group at a time.

Having your students keep records on how the training is progressing is important, because it allows both you *and* the students to see how they've progressed over time, and makes each training experience more fulfilling. Students should fill out the *Biofeedback Training Questionnaire* (page 39) after each training session, and the *Weekly Journal Summary* (page 40) at the end of every week.

Week 1

This first week should be devoted to getting students used to the GSR, and having them experiment with different types of feedback and relaxation methods.

SESSION I: Instruct students to go through the *Physical Stress Test* (option 2, Main Menu), and then go through each of the types of feedback available in the *Stress Management* option, #4. Have them use the tone feedback alone and with each of the visual feedback options, in order to determine which type of feedback they feel most comfortable with. For this first session, you may want to schedule a longer session--30 minutes or so--so students have time to really get the feel of the GSR and the options available to them.

SESSION II: Students should experiment with various types of relaxation techniques, to see what best helps them keep their stress levels down. Although they may already have determined which type of feedback they wish to use from the first session, suggest that for part of this session they use *CalmBar* and experiment with various relaxation methods. *CalmBar* enables them most clearly to see trends in their responses, and thus to determine which techniques seem to work best.

SESSION III: More experimentation with feedback and relaxation methods should be encouraged if needed; however, at least by the end of this session students should have a basic idea of how they will proceed in the weeks to come.

Week 2

Students should go directly to the *Stress Management* option and select the form of feedback they preferred in the last session. During the three sessions this week, students should do nothing more than try to relax as deeply as possible each session, using the feedback as their guide. Emphasize to students the fact that they are still in the learning stage, and thus may not always be able to achieve a deep state of relaxation every session, or the whole of each session. That is to be expected. Be sure that they realize that they should train alone, in quiet, and eliminate all distractions. The training session should have students' full attention, and the amount of time they have should be used completely.

Week 3

SESSION I: Again, this session should be devoted to simply relaxing deeply, using the guidelines in Week 2.

At this point, you may find that some students are having consistent difficulty in getting their stress level down. One suggestion to try is to instruct them to stop thinking about relaxing, stop *trying* to relax, and instead, close their

eyes and concentrate simply on lowering the tone. Once successful with the tone, they can then try the same thing with whatever type of feedback they have been using. Studies have shown that for certain people, the harder they try to relax, the worse they do. For them focusing in on the feedback and nothing more has been most successful. The idea is to "allow" the relaxation to occur--to simply watch it happen using "passive volition."

SESSIONS II and III: For the remainder of the week, students should continue to practice deep relaxation as they have been doing. However, once or twice during each session, for several minutes, instruct them to block out the feedback (turn off the tone, shut their eyes) and try relaxing without using feedback as a guide. Remember--the goal of biofeedback training is to teach individuals to relax at will, without any help. This exercise is helpful in accomplishing that goal.

Week 4

SESSION I: Continue as in Session II and III of Week Three, alternating relaxing with and without feedback.

SESSIONS II and III: At this point students should be fairly proficient at relaxing. Have them try the following exercise as an additional challenge:

1. Relax for several minutes, bringing your stress level down to a low, steady level.
2. When you feel completely relaxed, begin thinking about an upsetting incident that happened to you during the past week, or a future event that you are worried or concerned about. Your stress level will soon start to rise.
3. After several seconds of steady increase in the GSR, stop thinking about the stressful incident, clear your mind, and go back to focusing on lowering your stress level and relaxing deeply. Continue to relax until the feedback indicates that you have reached the low level you attained at the start of the exercise.
4. At this point, begin again to reflect on the stressful incident. Keep repeating this procedure.

If students keep practicing this exercise, eventually they will find that their GSR level will take longer to increase (if it increases at all) as they think about disturbing things, and will return to a low level faster after they stop thinking about the stressor. The goal here is to enable them in the future to handle everyday crises without throwing their systems into a state of alert.

This procedure is based on a technique called *systematic desensitization*, which is commonly used by psychologists to help patients overcome phobias, and to prepare them to cope with stressful situations.

C. Followup

Four weeks is not a very long time in which to learn a new behavior. Thus, your students should not expect to have mastered the ability to relax at this point. But they should find that they are much more proficient at relaxing than they were at the start of the program, and should feel they can better handle the pressures of everyday life.

Encourage students to continue their training--once per week with the biofeedback, and every day without, if possible. This will help to ensure that they do not lose the skills they have learned, and will help them be more relaxed overall throughout major crises or even minor frustrations.

Have each student write a report on their experiences. Spend a class period discussing the program, asking students what they liked, disliked, about the sensations they experienced, about how effective they felt the program was, etc. Ask several volunteers to read and discuss their reports.

LESSON IV. USING THE PSYCHOLOGICAL STRESS TEST

This test can be both fun and informative when done in a classroom setting.

A. Before the class, prepare your own word list for the *Word Association Test* and enter it into the computer (see instructions for *Psychological Stress Test*, pages 11-14). Be creative! Use words that concern upcoming events at school, topics you've covered in class, current events, etc. Be sure to include "neutral" words in the list.

B. At the beginning of the class, discuss the idea that certain mental thoughts can cause stress, and that words can be very emotionally charged. Reacting to words is similar to the way we react to certain smells, for example--just a sniff of a particular odor may conjure up a whole series of emotions based on past experiences with that odor, or odors like it. Ask students to come up with other parallels (for example, hearing a certain song and feeling a certain way each time you hear it).

C. Have several volunteers go through the *Word Association Test*. The room should be as quiet as possible while the student is taking the test; distractions or interruptions will interfere with the test results.

D. After each test, have the class view and discuss the results. (Note: It is best if you keep the discussion light and impersonal to avoid any embarrassment on the part of the volunteer.) Encourage students to try the test on their own when they have time.

E. Let students go through the *Most/Least Favorite Test* on their own time.

Biofeedback Training Questionnaire

Date _____

Week # _____ Session # _____

Rate how stressful the day has been:

(low stress) 0__1__2__3__4__5__ (high stress)

Describe specific things that happened at the times you felt particularly stressful:

1. _____
2. _____
3. _____

Rate how stressful you felt before beginning your session:

(low stress) 0__1__2__3__4__5__ (high stress)

What physical sensations and/or emotional feelings or thoughts occurred in the session? _____

What activities or methods for relaxing did you try today? _____

Did you feel that you were able to successfully relax?

- ☐ at times
- ☐ the entire session
- ☐ not at all

How stressful did you feel after completing the session?

(low stress) 0__1__2__3__4__5__ (high stress)

Additional notes: _____

Weekly Journal Summary

Date _____

Week # _____

How would you rate the past week in terms of stressful events?
(low) 0__1__2__3__4__5__ (high)

Describe some of the highlights, both good and bad, of the week: _____

How did you handle the stressful events of the week? _____

What are some of the key experiences you've felt in your training sessions this week? _____

Do you feel that you were better able to cope with stress this week compared to last week?

(less able) 0__1__2__3__4__5__ (better able)

APPLE: WORKING WITH THE COMPUTER

1. Turn on the television monitor.
2. Insert the diskette into the disk drive with the label facing up and on the right.
3. Close the door to the disk drive.
4. Turn on the Apple. (The *on-off* switch is on the back left-hand side of the computer.)
5. You will see a red light on the disk drive turn on. If the disk drive does not turn off in about ten seconds, turn the Apple off and make sure your diskette is placed correctly in the disk drive.
6. The SUNBURST logo will appear on the screen.
7. Follow directions given in the program.
8. If at any time during the program you want to stop, hold down the Control button and press the *E* key.

Turning off the Computer

1. Remove the diskette from the disk drive and return it to its place of storage.
2. Turn off the Apple.
3. Turn off the television or monitor.

Apple IGS: Control Panel Settings

To allow your Apple IGS to work properly with Sunburst software, certain Control Panel settings should be selected. The Apple IGS retains these settings even after the power is turned off.

To Use the Control Panel:

- Turn on the Apple IGS and monitor.
- Enter the Control Panel main menu by holding down the CONTROL and OPTION keys, and then press RESET (the rectangular key located above the number keys). If your Apple IGS is in an Apple //e case, use the closed-apple (🍏) key instead of OPTION.
- Press the 1 key to enter the Control Panel.
- Use ↓ and ↑ to highlight the feature you want to change and press RETURN. Again use ↓ and ↑ to highlight a specific option and change it by using the ← and → keys.
- After you have finished making changes, select Quit to use the Apple IGS.

To Change the Display:

- Highlight **Display** and press RETURN.
- Set **Type** to **Color**.
- Set **Columns** to **40**.
- Set **Text** to **White**.
- Set **Background** to **Black**.
- Set **Border** to **Black**.
- Press RETURN to save the changes and to go back to the Control Panel.

To Change the System Speed:

- Highlight **System Speed** and press RETURN.
- Set **System Speed** to **Normal**.
- Press RETURN to go back to the Control Panel.

To Change the Slots:

- Highlight **Slots** and press RETURN.
- Set **Slot 1** to **Printer Port**. If you are using a printer card, select the slot number your printer card is in.
- Set **Slot 6** to **Disk Port**, if you use a 5.25 - inch drive connected to the disk drive port.
- Set **Slot 6** to **Your Card**, if you use a 5.25 - inch drive connected to a controller card in Slot 6.
- Set **Startup Slot** to **Scan**.
- Press RETURN to go back to the Control Panel.

"WHAT HAPPENS IF...?" --SUNBURST COURSEWARE AND WARRANTY

1. What happens if a program will not load or run?
Call us on our toll-free number and we will send you a new diskette.
2. What if I find an error in the program?
We have thoroughly tested the programs that SUNBURST carries so we hope this does not happen. But if you find an error, please note what you did before the error occurred. Also, if a message appears on the screen, please write the message down. Then fill out the evaluation form or call us with the information. We will correct the error and send you a new tape or diskette.
3. What happens if the courseware is accidentally destroyed?
SUNBURST has a lifetime guarantee on its courseware. Send us the product that was damaged and we will send you a new one.
4. How do I stop the program in the middle to go on to something new?
These programs can be ended at any time by holding the Control (CTRL) key and pressing the E key. To change diskettes, select the End option on the menu and insert a new diskette.
5. Can I copy this diskette?
The material on the diskette or cassette is copyrighted. You should not copy the courseware.
6. Can I remove the diskette from the disk drive after I have loaded the program?
Yes.