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The Effects of a Relaxation/Stress Control Program on Elementary School Children

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ABSTRACT

The purpose of this study was to test the effectiveness of a ten week relaxation/stress control program for elementary school children. Two hundred and eighty children from kindergarten to grade six were involved in the study. Various stress control techniques were taught as well as ways to apply the techniques in the children's daily lives. Significant effects were found in the experimental group with respect to the children's capacity to lower their heart rates, across the school overall. Children in the experimental group also successfully utilized the relaxation/stress control skills in a variety of settings to help reduce stress in their daily lives. The results of this study were encouraging, especially with respect to children's capacities to learn and apply relaxation/stress control skills in their daily lives both inside and outside of school.

ACKNOWLEDGEMENTS

I wish to thank my academic advisor, Dr. Terry Orlick for his devotion to my work. His unique ideas regarding quality of life have instilled in me a positive perspective which has greatly enhanced the rewards I have experienced in my work with children.

My appreciation is also extended to the principal, staff and children at Manor Park Public School for allowing me to join the Manor Park Magic and making this experience such a pleasant one.

I also wish to acknowledge John Donohue for his patience and assistance with my data analysis, and Louise Zitzelsberger for her support and academic expertise.

DEDICATION

To my parents, Bob and Liz Cox, and grandparents, Margaret and Larry Ritza, for being my positive role models and for their constant love, support and encouragement in everything I do.

To my best friend, Marnie St. Denis, for the support, love and laughter in sharing this experience with me.

Stress and the ability to cope with it are important factors impacting on one's overall health and well being (Selye, 1956). While children, like adults, experience stress, they have often not acquired effective coping strategies (Chandler, 1985; Hiebert, 1983; Hiebert & Eby, 1985; Orlick, 1993).

Researchers agree that many potential problems could be avoided and benefits gained if children were taught effective means to cope with stress (Angus, 1989; Brandon, Eason & Smith, 1986; Couille, 1979; Dise-Lewis, 1988; Gunnar, 1987; Honig, 1986; Humphrey & Humphrey, 1985; Kraft & McNeil, 1987; Krampf, Hopkins & Byrd, 1979; Meckstroth & Tolan, 1983; Orlick, 1986, 1993; Ryan, 1989; Setterlind, 1983; Solin, 1991; Webb, Smith & Womack, 1987). Although many studies have been completed in the area of children and stress, few intervention programs have been designed specifically to meet children's needs. Most have lacked an element of playfulness and creativity that children so desire (Hiebert, 1988; Humphrey & Humphrey, 1985; Lubetsky,

1989; Smith & Womack, 1987).

The purpose of this study was to implement and test the effectiveness of a relaxation/stress control program which was designed specifically for children.

REVIEW OF LITERATURE

Elkind (1988) stated that parents are doing their children harm by treating them like adults and forcing them to grow up too soon. "Today's child has become the unwilling, unintended victim of overwhelming stress--the stress borne of rapid, bewildering social change and constantly rising expectations" (Elkind, 1988, p.3). Stress among children has become an issue of increasing concern to teachers, parents and counsellors. High levels of stress threaten the quality of life and psychological well being for both adults and children (Cox, 1978).

Brenner (1984) reported that the number and intensity of childhood stresses increased dramatically from the early 1970s to the 1980s. Many more children now live with only one parent; are experiencing abuse and neglect; are living in poverty, and there is a growing trend among parents to push their children to

excel at an early age.

Dickey and Henderson (1989) conducted a study with elementary school children to identify stressors and coping strategies in the elementary school setting. The main stressors were school work, peer relationships, homework, injury, loss, discipline, relations with teachers, and family.

Dickey and Henderson's study as well as a study by Ryan (1989), indicated that children lack the skills for coping with stress in positive ways. Stress, in the absence of effective coping strategies can have detrimental effects physically, psychologically, socially and behaviourally. In the case of prolonged or severe stress, the child's health can be affected (Chandler, 1985; Orlick, 1993).

In so far as children in today's society are believed to be facing more stress than ever before (Elkind, 1988), and stress related disorders are rapidly increasing (Hiebert & Eby, 1985), it is imperative that children begin learning effective stress control strategies for life. Students with greater coping resources reported less stress (Hiebert

& Allen, 1991).

Stress Control Studies with Adolescents

Studies have shown that adolescents have undergone stress and that many lack effective coping strategies (Culbertson & Hatch, 1990; Hiebert & Allen, 1991; Hiebert, Kirby & Jaknavorian, 1989).

Hiebert and Eby (1985) implemented a relaxation program for grade 12 students within the context of the students' regular English classes. The students were required to practice a self relaxation program, designed by Hiebert, at home for 30 mins. each day. They also completed daily log sheets and submitted a final self-report essay when the program was completed. The State-Trait Anxiety Inventory and the Symptoms of Stress Inventory were used to assess the results. Hiebert and Eby concluded that progressive relaxation and self hypnosis training using audiotapes were effective in reducing anxiety levels.

Hiebert and Allen (1991) completed further research in this area and on a larger scale, with an intervention program for grade 10 and 12 students. It was found that adolescents with greater coping

resources demonstrated lower levels of stress and less frequent stress symptoms. It was also noted that stress levels in adolescents were higher and their coping resources lower than the population at large.

Hiebert, Kirby and Jaknavorian (1989) conducted three studies with high school students involving progressive relaxation. Findings suggested that high school students could learn relaxation and that such learning was accompanied by changes in both physiological and cognitive measures. Also, adolescents, exposed to relaxation programs, demonstrated a decrease in physiological and cognitive responses to stress (Culbertson & Hatch, 1990; Hiebert & Allen, 1991; Hiebert & Eby, 1985; Hiebert, Kirby & Jaknavorian, 1989).

Stress Control Studies with Children

Several studies have found that children can be taught relaxation techniques in a school setting (Oldfield & Petosa, 1986; Setterlind & Patriksson, 1982; Zaichkowsky & Zaichkowsky, 1984).

Setterlind and Patriksson (1982) conducted a six week study with Swedish elementary school children,

teaching various methods of relaxation. They concluded that children were able to learn to relax and that they have different preferences in relaxation techniques.

Zaichkowsky and Zaichkowsky (1984) evaluated the effects of a six week relaxation training program on fourth grade children. Their findings indicated that children could learn stress control techniques within a six week period. They also determined that the children could influence both physiological and psychological states within the intervention setting. Physiological states included respiration, peripheral skin temperature, and heart rate. The children's heart rate was measured using the "Insta-Pulse", a hand held instrument which measures heart rate on a beat to beat basis. Three consecutive heart rate measures were taken and the mean was used as an indicator of heart rate.

Oldfield and Petosa (1986) conducted a study with children between the ages of five and twelve and found that relaxation increased their on-task classroom behaviour. This study indicated that relaxation skills positively influenced the children's ability to focus

or be attentive in a school setting.

Various attempts have been made to educate children about stress and relaxation but few of these interventions have been "childlike" in design and implementation (Angus, 1989; Bedford, 1981; Blais & Vallerand, 1986; Brandon, Eason & Smith, 1986; Day & Sadek, 1982; Donney & Poppen, 1989; Hiebert, 1988; Humphrey & Humphrey, 1980, 1985; Jacobson, 1978; Kraft & McNeil, 1987; Lewinsohn, Antonuccio, Steinmetz & Teri, 1984; Lubetsky, 1989; Marley, 1984; Martin, 1988; McBrien, 1978; McMurray, Bell, Fusillo, Morgan & Wright, 1986; Smith & Womack, 1987; Stroebel, Stroebel & Holland, 1980; Zhang, Ma, Orlick & Zitzelsberger, 1992).

Orlick designed a relaxation/stress control intervention program specifically for children to address this shortcoming. Activities were created to be playful, fun, imaginative and game-like, always keeping the child's perspective in mind.

Cox (1991) pilot tested this program with 90 elementary school children from kindergarten to grade six. The children reported that they enjoyed the

activities and that they felt "good" and "relaxed" when doing them. This pilot work indicated that Orlick's relaxation/stress control program was both fun and appropriate for children.

Following a review of the literature in intervention programs used with children and pilot testing Orlick's relaxation/stress control program (Cox, 1991), Orlick's intervention program was felt to be most appropriate for use in this study. The goal of this intervention program was to teach children how to relax and how to use the relaxation/stress control skills effectively in their daily lives, and to do so in an enjoyable and respectful way.

This study was a first step in assessing the effectiveness of this program.

For a more extended review of the literature, refer to thesis proposal (Appendix A).

METHODS

Subjects. The subjects for this study consisted of two intact classes at each grade level from kindergarten to grade 6 from a middle-class city school in Ottawa. Two hundred and sixty-six children were involved in the research project: 146 children in the experimental group and another 120 children in a control group. Table 1 displays the number of subjects within each group.

Table 1

Distribution of Subjects by Grade and Group

Grade	Experimental	Control	Total
K	15	10	25
1	13	12	25
2	19	13	32
3	22	20	42
4	27	22	49
5	23	22	45
6	27	21	48
TOTAL	146	120	266

Intervention. The intervention program was conducted in the school in grades kindergarten through grade six. The regular teacher for each grade was in attendance for each session. The students in the experimental group participated in pre- and post-testing as well as the experimental intervention program. The students in the control group participated in pre- and post-testing and otherwise followed their normal classroom schedule.

Orlick's (1993) relaxation/stress control intervention program was introduced to the experimental group in twenty minute sessions, three times per week, over a period of 10 weeks. Students were taught a series of relaxation activities along with basic concepts about stress and relaxation. The relaxation activities covered different modes of relaxation: locating muscles and relaxing them, diaphragm breathing, mental imagery, and relaxing to music. Relaxation was also combined with refocusing activities to teach children how to put away small worries in a constructive manner and replace them with positive thoughts or feelings. A typical session included a

discussion on relaxation and stress control, followed by the implementation of a relaxation activity through the use of an audio tape (Orlick, 1993). Following is a list of activities used in the intervention with the length of each activity on audio tape in minutes, and a brief description of each (see Orlick, 1993, for more detail):

Spaghetti Toes (6:00) - wiggle and relax each body part making it feel like warm, soft spaghetti.

Jelly Belly (4:09) - perform abdominal breathing to fill up jelly belly (stomach) and empty it.

Echo Lake (4:41) - repeat positive statements to yourself or out loud (e.g. I am relaxed, I am strong).

Quiet Lake (2:20) - imagine yourself relaxing next to a beautiful, quiet, calm lake.

Butterfly/Flutterby (2:00) - imagine a butterfly fluttering and floating gently in the air.

Floating on Clouds (3:20) - imagine yourself floating on big, soft, fluffy clouds.

Soaring (3:26) - imagine yourself soaring like a seagull.

Standing Relaxation (4:55) - relax various muscles

and breathe easily and slowly while standing.

Special Place Relaxation (3:28) - imagine your own special place, one that is very relaxing.

Flowing Stream (4:51) - imagine yourself flowing like a little stream around rocks and obstacles.

Relaxed Breathing (3:38) - breathe easily and slowly.

Muscle Relaxation (4:30) - think into various muscles and relax them.

Follow Your Breathing (3:45) - breathe easily and slowly, listening to the sound of your own breathing.

One Breath Relaxation (3:37) - take one deep breath in, let it out, and relax.

Star Track (6:49) - imagine yourself on a space voyage floating in space.

The Peaceful Sea (3:13) - listen to relaxing music with sounds of gentle waves and seagulls.

Tree It (3:17) - put worries away and replace them with positive and happy thoughts.

Changing Channels (2:10) - change mental channels from being negative to positive, worried to relaxed, unhappy to happy.

Reminders For Feeling Good (3:00) - listen to seven key reminders about how to be positive with yourself and others.

The children were continuously encouraged to use the various relaxation/stress control techniques on their own, at home or outside the classroom. Ongoing follow-up discussions were incorporated into the program to allow children to share how they had used the techniques outside the classroom and how it had worked.

RESEARCH INSTRUMENTS

Kite scales. A 10 point sad face/happy face scale was used to assess the extent to which the children liked or disliked the various relaxation and stress control activities (see Appendix B).

Heart rate monitors. DT 1000 heart rate monitors were used in pre- and post-testing to measure the physiological effects of the relaxation training. The DT 1000 is a simple light weight heart rate monitor which clips to the ear lobe. When validated against the Vantage XL - Polar sport tester, it proved to be 97% accurate (Reed, 1993). Two separate pre-tests were

administered to both the experimental and control groups. Once each child had been outfitted with a heart monitor, a baseline heart rate was recorded. While sitting at their desks, the researcher gave the following instructions to the children for the first pre-test. "Get yourself comfortable, close your eyes if you want, and try to relax for one minute." At the conclusion of the one min. time period, while students were still attempting to relax, the children's heart rates were again recorded with the DT 1000.

On a separate day, a second pre-test heart rate measure was taken. Pre-test two followed the same procedure as pre-test one except that the children were instructed to "relax the best way you know how" for the timed minute. At the conclusion of the intervention program, two additional heart rate measures were taken. Post-test one was identical to pre-test one and post-test two was identical to pre-test two.

Logbooks. Each child in the experimental group in grades 3 to 6 was given their own logbook. Children recorded stressful experiences, coping strategies attempted, relaxation experiences and other techniques

they tried on their own, in their logbooks. Logbooks were also used to promote discussion about stressful experiences and successful relaxation/stress control activities that they implemented outside the classroom. Logbooks were collected and monitored weekly. Written feedback was provided to the children in their logbooks to point out their progress and encourage them to continue using positive strategies.

At the conclusion of the intervention program, logbooks were collected and analyzed to assess the extent to which experimental group children were applying the stress control activities taught in the intervention in their daily lives (Appendix B).

Interviews. Individual interviews were conducted with each child in the experimental group at the conclusion of the intervention program to assess the extent to which children were effectively using relaxation/stress control activities in their daily lives (Appendix F).

Questionnaires. Short questionnaires were distributed to the parents and teachers of children in the experimental program to gain their view of the

program and to assess the extent to which they thought their children were using the relaxation activities in their daily lives (Appendices G and H).

RESULTS

The results from this study are divided into 3 parts: 1) the extent to which children enjoyed the relaxation/stress control activities as indicated by kite scale results, 2) the extent to which children learned to relax themselves "at will" as indicated by heart rate scores and 3) the extent to which children utilized the relaxation/stress control skills in their daily lives, as indicated by logbook analysis, student interviews, and teacher and parent questionnaires.

Enjoyment of Program Activities - Kite Scale Results

A 10 point sad face/happy face scale ranging from "hated it" to "loved it" was used to determine the extent to which the children liked or disliked the various relaxation and stress control activities in the intervention program (Appendix B). Following the various relaxation activities, students rated how much they liked or disliked each activity. Table 2 indicates the name of each relaxation activity and an

average rating for each class out of 10, with 1 being hated it, 3 being disliked it, 5 being liked it, 7 being really liked it and 10 being loved it.

The children's ratings indicated that they liked all the activities in that their mean ratings ranged from 5.00 "liked it" to 9.90 "loved it". The overall mean for all activities across all grades was 7.63.

Table 2.
Experimental Group Ratings on Enjoyment of Program Activities for Grades K-6 (1 = hated it, 5 = liked it, 10 = loved it).

Activity	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Mean Rating
Spaghetti Toes	9.30	8.10	8.30	6.50	6.70		5.20	7.35
Jelly Belly	9.50	7.70	8.10	9.00	6.40	5.20	5.10	7.29
Echo Lake	8.40	6.50	7.30					7.40
Quiet Lake	8.50	7.80	8.20	5.30	5.20	7.20	7.50	7.10
Butterfly/Flutterby		9.10	8.60	5.20	5.70	6.30		6.98
Floating On Clouds	9.10	9.50	9.10	7.50	6.80	8.50	8.10	8.37
Soaring	8.90	7.90	8.20	6.80	7.10	7.90	7.50	7.76
Standing Relaxation		6.30	6.10	5.30	5.60	5.30	5.00	5.60
Special Place	9.00	9.50	9.40	9.30	8.60	7.80	9.30	8.99
Flowing Stream	7.10			6.90	6.90	7.60	7.80	7.26
Relaxed Breathing						6.80	7.10	6.95
Muscle Relaxation				6.90	5.60	8.10	8.00	7.05
Follow Your Breathing						8.20	6.30	7.25
One Breath Relaxation				5.70	8.00	8.50	8.10	7.58
Star Track	8.90	9.90	9.70	9.30	9.60	8.60	8.90	9.27
The Peaceful Sea		9.60	8.80	7.50	7.40		8.50	8.36
Tree It		9.40	9.30	7.70	7.50	5.10	7.00	7.67
Changing Channels		9.00	8.90	6.60	6.80	6.30	6.80	7.40
Reminders for Feeling Good		8.80	8.50			6.30		7.87
Mean Rating	8.74	8.51	8.46	7.03	6.93	7.11	7.26	7.63

Note: All activities were not implemented with each grade level.

Heart Rate Reduction

Learning to relax - heart rate scores. Heart rate scores were used to assess the extent to which children learned to relax themselves "at will". Heart rate results include ANOVA results and heart rate difference scores. Refer to tables 3 and 4 (Appendix M) for heart rate means for tests one and two.

Anova results. The heart rate difference scores for test one and for test two were analyzed using a 2 X 7 (Group X Grade) ANOVA design. For test 1 there was a significant Group effect ($F(1,243) = 15.25$, $p<0.025$). In test one the heart rate difference score overall mean for all grades in the experimental group was -6.62 (S.D.= 15.42) and the heart rate difference score overall mean for all grades in the control group was 0.36 (S.D.= 14.30).

For test two there was also a significant Group effect ($F(1,237) = 15.52$, $p<0.025$). In test two the heart rate difference score overall mean for all grades in the experimental group was -7.44 (S.D.= 17.21) and the heart rate difference score overall mean for all grades in the control group was 0.82 (S.D.= 15.69).

In both tests one and two students in the experimental group were able to lower their heart rates to a significantly better extent than students in the control group. It was determined that the group which received the intervention displayed a greater ability to decrease their heart rate "at will" than did the group who did not receive the intervention for both tests one and two, irrespective of grade.

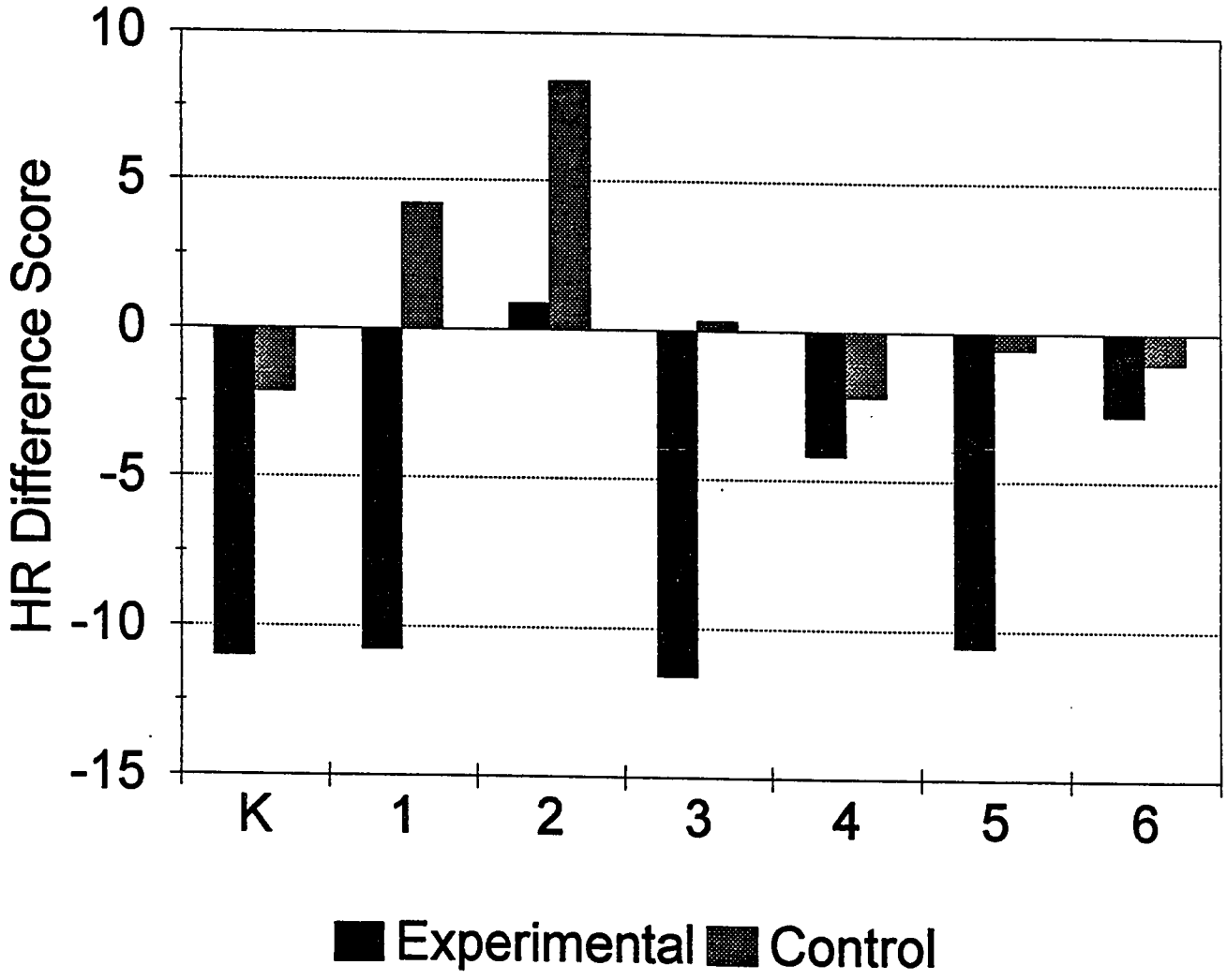
Note: Heart rate data were interpreted with a modified significance level (alpha) of 0.025 because two separate ANOVAS were performed (Huberty & Morris, 1989). Huberty and Morris (1989) defended this alpha level as there is no interest in studying tests 1 and 2 together as indicators of some common factor. Therefore, the alpha level of 0.05 is divided by two.

Heart rate difference scores. The heart rate difference scores for the pre- and post-tests for the experimental and control groups are presented in Graphs 1 and 2. The heart rate score represented the students' heart rates after relaxing minus the students' heart rates before relaxing (i.e., the extent to which they were able to reduce their heart

rate in one minute). The heart rate difference score represented how much the students were able to reduce their heart rate in the post test (following the intervention), compared to how much they could lower it before the intervention program began.

Graph 1

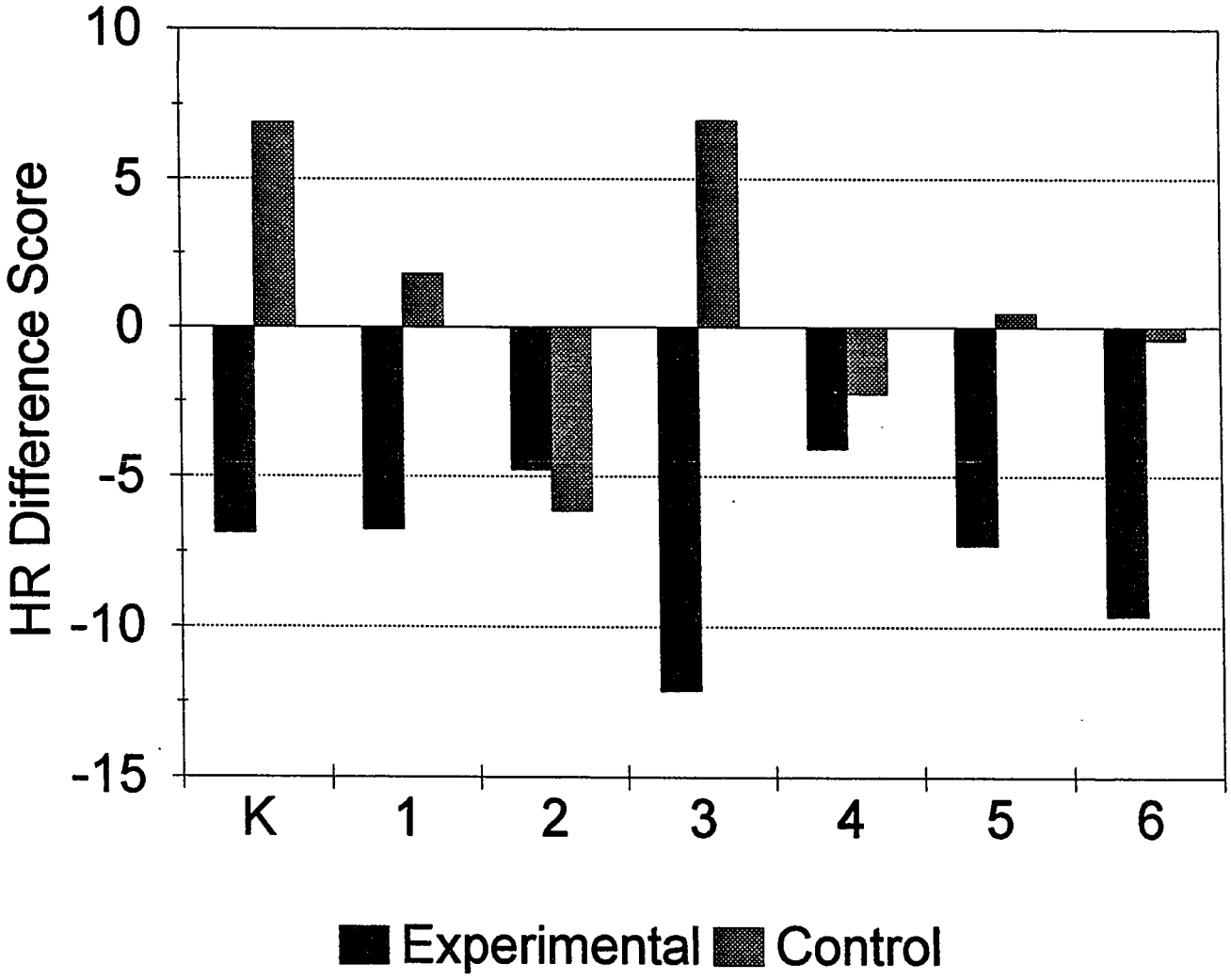
Heart Rate Difference Scores for Test 1 for
Experimental and Control Groups, Grades K-6



Note: Difference score = the amount which students were able to reduce their heart rate in the post test (following the intervention), compared to how much they could lower it before the intervention program began.

Graph 2

Heart Rate Difference Scores for Test 2 for Experimental and Control Groups, Grades K-6



Note: Difference score = the amount which students were able to reduce their heart rate in the post test (following the intervention), compared to how much they could lower it before the intervention program began.

Utilization of Relaxation/Stress Control Skills

An attempt was made to assess the extent to which children applied the various skills they had learned in the program, in their daily lives. This was done through qualitative analysis of the children's logbooks, individual interviews with children in the experimental group and questionnaires with parents and teachers. Table 5 displays the utilization of relaxation/stress control skills in daily life for children in the experimental group from grades kindergarten to 6.

Logbook analysis. Extensive amounts of qualitative data were collected through the use of student logbooks (Appendix B). Each student taking part in the intervention program in grades 3 to 6 made entries into their logbook at least three times per week over the course of 10 weeks.

The major purpose of the logbook analysis was to assess whether experimental group children had been applying the stress control activities taught in the intervention in their daily lives.

One component of the logbook was the "cat scale",

Table 5.
Utilization of Relaxation/Stress Control Skills in Daily Life Grades K-6.

Grade	Total	Parent Support	Teacher Support
Kinder	10 / 13 77%	9 / 11 82%	1 / 1 100%
Grade 1	13 / 13 100%	11 / 11 100%	1 / 1 100%
Grade 2	15 / 15 100%	13 / 14 93%	1 / 1 100%
Grade 3	21 / 21 100%	13 / 14 93%	1 / 1 100%
Grade 4	27 / 27 100%	23 / 25 92%	1 / 1 100%
Grade 5	21 / 21 100%	15 / 21 71%	1 / 1 100%
Grade 6	26 / 26 100%	21 / 24 88%	1 / 1 100%

Note: Total score represents the number of students who effectively utilized the relaxation/ stress control skills in their daily lives. Total score is derived from student logbooks and follow up interviews with grades 3 to 6, and from follow-up interviews and class discussions with grades Kindergarten to 2. Parent and teacher support represents the number of parents and teachers who reported that the children were using the relaxation/stress control techniques effectively in their daily lives. Parent and teacher support scores were derived from post program questionnaires.

a subjective measure of stress vs. relaxation devised for the purpose of this intervention. It consisted of a 5 point scale ranging from very stressed to very relaxed. Each point on the scale was represented by a cat depicting various degrees of tension and relaxation.

Children used cat scales in their logbooks to rate the level of stress they felt in specific situations and the level of stress they felt after implementing a relaxation/stress control strategy (see Appendix B).

To facilitate the presentation of the logbook results, one representative class was chosen to present in detail - grade 3. Grade 3 was chosen because their overall scores were representative of most classes, and they were old enough to write clear or comprehensible entries into their logbooks.

Ninety-nine student logbooks (grades 3-6) were qualitatively analyzed. In their logbooks children were asked to respond to the following questions:

a) Did anything stressful happen yesterday or today? If so, what happened? How did you feel when this happened?

b) Did you do anything to feel less stressed? If so, what did you do? How did you feel after doing this?

Students rated how they felt when the stressful situation initially occurred, and how they felt if they tried to do something to feel less stressed. Ratings ranged from 1-5, with 1 being very stressed, 2 being a little stressed, 3 in between, 4 a little relaxed and 5 very relaxed.

Two researchers independently analyzed each logbook and agreed that all 99 students (100%) reported effectively applying relaxation and stress control strategies that were taught in the intervention program. In their relaxation logbooks, every student clearly indicated at least once and often many times, that a stressful experience had occurred (which they rated as stressful or very stressful) for which he or she successfully implemented a stress control strategy taught in the intervention program. The implementation of the strategy was judged to be "effective" by the researchers if the student's feelings and rating of feelings (on the 5 point scale) moved from stressed, to

more relaxed after implementing the strategy.

Following are eight representative samples of children judged as effectively implementing an intervention strategy, taken directly from student logbooks.

Example #1 (Grade 3 boy)

Q. Did anything stressful happen? If so, what happened?

A. I sprained my finger.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I did floating on clouds.

Q. How did you feel after doing this?

A. Rating = 5, very relaxed.

Example #2 (Grade 3 girl)

Q. Did anything stressful happen? If so, what happened?

A. I got in trouble.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I concentrated on my breathing (follow your breathing relaxation activity).

Q. How did you feel after doing this?

A. Rating = 4, a little relaxed.

Example #3 (Grade 4 boy)

Q. Did anything stressful happen? If so, what happened?

A. My mom got mad at me.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. Standing relaxation.

Q. How did you feel after doing this?

A. Rating = 4, a little relaxed.

Example #4 (Grade 4 girl)

Q. Did anything stressful happen? If so, what happened?

A. I fell and cut my leg.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I went to my own special place (special place relaxation).

Q. How did you feel after doing this?

A. Rating = 5, very relaxed.

Example #5 (Grade 5 boy)

Q. Did anything stressful happen? If so, what happened?

A. I had to finish my homework and I was tired.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I did flowing stream.

Q. How did you feel after doing this?

A. Rating = 5, very relaxed.

Example #6 (Grade 5 girl)

Q. Did anything stressful happen? If so, what happened?

A. My book report is due on friday and I have not

finished it.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I did follow your breathing.

Q. How did you feel after doing this?

A. Rating = 5, very relaxed.

Example #7 (Grade 6 boy)

Q. Did anything stressful happen? If so, what happened?

A. I could not get to sleep.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I did muscle relaxation.

Q. How did you feel after doing this?

A. Rating = 4, a little relaxed.

Example #8 (Grade 6 girl)

Q. Did anything stressful happen? If so, what happened?

A. I hurt my back playing basketball.

Q. How did you feel when this happened?

A. Rating = 1, very stressed.

Q. Did you do anything to feel less stressed? If so, what did you do?

A. I did muscle relaxation.

Q. How did you feel after doing this?

A. Rating = 4, a little relaxed.

The above eight examples illustrate how children utilized relaxation/stress control techniques that they had learned in the intervention program in "real" stress situations they faced in their everyday lives. Every child in the experimental group from grades 3 to 6 cited similar examples in their logbooks where they had applied specific intervention strategies. They reported using the relaxation/stress control strategies they had learned in a wide variety of circumstances and situations. Their comments and ratings indicated that the children found the techniques to be effective in real situations with respect to stress reduction (for more extensive grade 3 case study evidence which supports this finding, see Appendix J).

A comprehensive list of their stressful experiences was compiled from the children's logbooks, class discussions and individual interviews. An attempt was made to categorize their stressful experiences into common themes that emerged from the data. After analyzing all of their "stressful experiences" the two researchers came to the following consensus with respect to common themes that had emerged. These themes should be considered preliminary until substantiated by further research.

People stress - revolved around conflict, arguments, feelings of rejection or guilt primarily with respect to parents, friends, siblings or others.

Parents
- my parents were bugging me
- my dad was lecturing me
- my mom yelled at me

Friends
- my friend was bugging me
- I was fighting with my friends
- my friend likes my other friend more than me

Siblings
- I was in a fight with my sister
- the baby was bugging me
- I wasn't getting enough attention because there is a new baby

Others
- bullies
- arguing with peers

School stress - revolved around homework, tests

and meeting expectations.

I felt nervous before a test
I felt worried after a test
My teacher was mad at me
I was not finished my homework

Sport/Performance stress - revolved around pre-performance anxiety and/or failing to win, pass or meet expectations.

I did not pass my Tai Kwon Do test
today is my ballet exam
we lost in hockey

Sleeping Problems - revolved around not being able to sleep, scary thoughts or bad dreams.

I could not get to sleep
I had a bad nightmare that was scary
I did not get enough sleep

Loss of Control - stress revolved around frustration, loss, a sense of helplessness, or fear.

my pet died
waiting for an answer
I could not do what I wanted to do
I am afraid of my sister's dog
I am afraid of the dark

Illness/Hurt - stress revolved around injury, illness or medical treatment.

I felt sick
I hurt myself
I had to go to the doctor's office

These categories were derived independently from the data by the researchers without reference to other studies on stress. It is interesting to note that all the stress components for children found by Dickey and Henderson (1989) were accounted for in these categories (ie., school work, peer relationships, homework, injury, loss, discipline, relations with teachers, and family).

Interviews. Individual interviews were conducted with each child in the intervention program to assess the extent to which they had used the various techniques on their own, and as well to assess their overall feelings about the program. Interviews were conducted by researchers who were not involved in teaching the relaxation/stress control program (see Appendix F for interview guide).

When asked how they felt about the relaxation program, 100% of the grade three students in the experimental program (n=22) said they liked it. Some representative comments were: "I liked the activities", "it was fun", "I liked everything about it", "it relaxed me" and "it made me feel good".

All of the students in the program (n=22) said that the relaxation program had helped them in one or more of the following ways: to relax (e.g., "to get to sleep at night", "to relax when I am stressed out"), to deal with stress (e.g., "to know how to deal with stress", "to get stress away", "to calm down when others call me names") and to feel better (e.g., "to feel better", "to feel happier").

When asked what they had learned in the relaxation program, the children's responses fell into the following four areas: how to identify stress (e.g., "what stress means", "what stress feels like"), how to get rid of stress in a positive way (e.g., "how to deal with stress", "how to control stress", "how to stay calm when I am being teased"), how to relax (e.g., "how to relax", "how to relax your muscles and feel good if you are stressed") and how to be more patient (e.g., "I learned how to be more patient").

All of the students in the program said they had tried the relaxation activities taught in the program on their own, (e.g., at home, in bed, in their own room, at school, at a friend's place, at grandma's

house, in the car, at the mall and outside). When asked if they had told or taught anyone who was not in the program about the relaxation activities, 95% of the students in the program (n=21) said "yes". The people they had told/taught included parents, brothers, sisters, grandparents, friends, aunts, uncles and cousins.

When asked if they thought they would continue to use the relaxation activities on their own, all of the students in the program (n=22) responded positively. They mentioned a variety of circumstances in which they would use the activities, for example, when they get stressed or worried, when they are mad, sad, angry, hurt, sick, at school, at home, in the car, if they can't get to sleep at night, if they have nightmares, during scary movies, during recess, if someone is teasing them, to practice, to feel better, to calm down, if a friend decides not to be their friend any more, if they get into a fight with their family and just to relax for fun.

Upon completion of the intervention program, when the students in the grade three experimental group were

asked what works best for them to relax and to make themselves less worried, 91% (n=20) mentioned using stress control techniques taught in the intervention program. Some representative examples included: "muscle relaxation", "one breath relaxation", "special place relaxation", "jelly belly", "floating on clouds" and "thinking positive thoughts". They also reported that the refocusing concepts, "can't do magic", "changing channels", and "tree it", were fun and effective in helping them to change their focus from negative or stressful thoughts to something more positive or constructive.

When grade three children in the control group were asked the same question, 60% (n=12) said that they did not know anything they could do to relax or to make themselves feel less worried. Some of the remaining 40% of the control group students mentioned some "naive" strategies, including: "play nintendo", "watch t.v." and "listen to music". The "best" strategies mentioned by the experimental group are ones that they can carry with them anywhere (i.e. inside their own head). The "best" strategies mentioned by the minority

of students in the control group who could think of any strategies are ones that require external aids (such as a t.v., computer game or sound system), thus restricting their use to specific situations, for example, at home as opposed to when giving a speech in front of their class.

Parent and Teacher Feedback.

Parent. Questionnaires were distributed to the parents of children in the relaxation program to gain an understanding of their perception of the program (Appendix G). Sixty eight percent of the grade three parents (n=15) returned their questionnaire. When asked if their child had mentioned the relaxation program at home, 100% of the parents responded positively. The main ideas that children shared with their parents about the program included: ways to relieve stress, relaxation techniques taught in class, ways to put your worries away, heart rate monitoring, breathing exercises, how to relax, feelings related to stress and how to visualize. The children told their parents that they enjoyed the program, that it was fun, and that it helped them to get to sleep and when they

were stressed. Many children shared specific class relaxation activities including star track, special place, floating on clouds, jelly belly and spaghetti toes.

When asked if their child had taught them any of the relaxation activities they had learned in class, 50% of the parents responded positively. The children generally taught their parents specific relaxation activities that they felt would be helpful for their parents, such as how to put worries away into jars or trees and breathing exercises to relax away stress.

Most of the parents (93%) said that their child enjoyed the program. Typical comments included: "the children enjoyed the relaxation tapes", "the children enjoyed the imagery" and "the children thought that the program was fun". The parents (93%) also felt that the program was beneficial for their child, probably because most of the parents believed that learning to cope effectively with stress was an important skill to learn early in life. Parents stated that their children had learned to recognize stressful situations, to talk about stress more openly, to deal more

effectively with tension and stress, and to express their feelings more readily. They also stated that their children were using specific relaxation techniques when they were upset. Specific changes they had observed included their children being more positive, more relaxed, calmer and happier. The vast majority of parents said that they would like to see the relaxation program included as part of the permanent curriculum within the schools.

Teachers. Questionnaires were distributed to all teachers whose classes were involved in the intervention program to gain an understanding of their perception of its content and impact (Appendix H). The teachers comments were very positive and support the data collected from both children and parents. The grade three experimental group teacher's responses which follow directly are representative of the overall response of teachers in the school.

When asked what she thought of the relaxation program, the teacher commented that it was a "super program" and "very professionally organized". "The activities were very interesting and easy to apply and

it was great to have some techniques that do not need any material. I will definitely use the program every year with each grade that I teach".

When asked if she had noticed any carryover from the relaxation program the teacher replied that she was aware that the children were using the relaxation techniques at home for various reasons. She felt that the program had helped many children and that "teaching the program to the children has given them a great tool that they will never forget". She also pointed out that some of the children in her class were living in difficult situations at home and that they were using the stress control techniques to help themselves cope.

When asked if she had tried using any of the techniques herself, she commented that following the intervention program, she began "using mental imagery a lot on a day to day basis" and learned the relaxation techniques herself. She also pointed out that if she senses that the children are not relaxed, she often refers them to a particular technique taught in the program.

DISCUSSION

The results of the study clearly indicate that children who participated in the relaxation/stress control intervention program: 1) enjoyed the activities in the program, 2) learned how to relax, and 3) implemented the relaxation/stress control strategies in a wide variety of real world situations. The results suggest that children can learn relaxation and stress control skills if they are taught how to do so in an appropriate way. This is true for children in kindergarten through grade six.

This is contrary to the findings of Edwards and Miller (1988) who attempted to teach elementary school children theoretical and practical aspects of stress management, with an emphasis on progressive muscular relaxation, guided imagery and autogenic phrases. They did not find significant decreases in the children's heart rates or changes in their abilities to handle stress. These authors concluded that children may be too cognitively immature to experience positive changes. It is possible that a weakness in Edwards and Millers' (1988) study was not the children's

immaturity, but rather, that the children did not enjoy or relate to the "adult-like" activities and thus did not effectively learn or implement the strategies.

If the intervention activities are enjoyable, it is probable that the children will want to do them at school and on their own. If they are viable in terms of "working" to maintain control or reduce stress, they will likely want to use them in their daily lives.

It is important to remain open to children's input for the creation of new and perhaps more effective strategies.

When sharing coping techniques in class discussions throughout the intervention program, children came up with some innovative and practical techniques on their own. The following self generated technique was shared by a grade 3 female student and after sharing it with the class, it became a popular coping strategy used by other children. She called it a worry jar and explained it as follows - "If you have a worry, write it out on a piece of paper and put it in a worry jar. When you have time, pull the worry out of the jar and try to deal with it. If you can't deal

with it, put it back in your worry jar until you are ready or it goes away."

The results of the current study are supported by the work of Swedish researchers, Setterlind and Patriksson (1982), Setterlind (1983a & 1983b) and Solin (1991), all of whom have found that children possessed the ability to learn relaxation and stress control skills. In a relaxation study with children in grades six to ten, Setterlind (1983a) concluded that the majority of the students learned how to relax, and thought that they could apply these skills on their own.

One of the goals of the current study was to implement an enjoyable relaxation program specifically designed for children. The children's overall ratings of the various activities clearly demonstrated that they enjoyed the relaxation/stress control activities. Children appear to learn best when activities are appropriate to their age level and when they enjoy what they are doing. It is interesting to note that the two favourite activities for grade three students (ie., special place relaxation and star track, both rated

9.3/10) were activities that allowed for a great deal of creativity.

An interesting and unexpected finding in this study was that 95% of the children in the experimental group told or taught others who were not in the program about the program (e.g., parents, siblings and friends). It is rare that children come home from school and teach their parents or brothers and sisters something they have learned in school. They said they did this because they felt it could help their parents or family members. In essence they felt it was something worth sharing. Children initiated this action on their own and without any suggestion from the teachers or researchers.

Perhaps the most hopeful finding in this study was the fact that the children in the experimental group were using the skills they were learning and said that they would continue to use the relaxation/stress control techniques on their own in their daily lives in the future. The teachers noted that the children regularly reported using the techniques on their own at home and in other situations when they were stressed.

The parents reported that their children were using the techniques at home, and felt that the program had helped their children become more relaxed, more positive or happier. Parents also said that they would like to see a program like this incorporated into school curriculum.

There are many educationally sound reasons for introducing relaxation and stress control training within the school curriculum. Stress interferes with concentration, classroom management, positive interaction and learning. As Blom, Cheney and Snoddy (1986) pointed out, many children respond to stress by acting out and essentially hinder the learning of all of the children in the classroom.

Jacobson (1978), Brandon et al (1986), Solin (1991) and Orlick (1993), contended that relaxation skills can facilitate focusing, learning, performance and balanced living, all of which are worthy educational objectives.

CONCLUSIONS AND RECOMMENDATIONS

The current study demonstrated that children are capable of learning a variety of relaxation/stress control strategies and effectively applying these strategies in a variety of settings. When intervention activities are simple, enjoyable and specifically designed for children, they are motivated to do them, and when encouraged to apply the strategies in a variety of potentially stressful situations, will do so.

This study supported the proposition that once children learn appropriate relaxation and stress control skills they are capable of utilizing these skills in many areas of their life. It is logical to assume that they will also be capable of carrying these skills with them later in life, however long term studies will be needed to assess this assumption.

When designing or refining existing programs for children, it is important to consider the "fun" aspect of activities, to think of simple and creative ways to communicate basic concepts, and demonstrate the practical benefits of the skills being taught.

Future studies should analyze the longer-term effects of the intervention program by doing follow up studies, for example, one year, three years and five years after teaching the program.

Programs should be introduced into the school system so that all children learn basic relaxation skills and skills for preventing and coping with stress. The elementary school system is a logical place to teach relaxation/stress control skills to children. Teachers could incorporate the program into the regular curriculum and both teachers and students could benefit.

Future research should test the effect of relaxation/stress control training on children and teachers, where teachers conduct the intervention program.

Parents could play a greater role in reinforcing the skills that children learn in the relaxation program. Children could play a greater role in teaching their parents and siblings various relaxation/stress control skills.

Finally, continued research is needed on the

development of valid, accurate and reliable measurement tools for children to assess the effectiveness of relaxation/stress control programs, particularly with respect to psychological or attitudinal changes (e.g., anxiety, levels of stress, coping capacities, concentration, self confidence, positive thinking and overall happiness).

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APPENDIX A

Research Proposal

Research Proposal

The Effects of a Relaxation/Stress Control Program on Elementary School Children

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Stress and the ability to cope with it are important factors impacting on one's overall health and well being (Selye, 1956). Children, like adults, experience stress and because children have often not acquired effective coping strategies, they experience stress at levels higher than necessary. (Chandler, 1985; Hiebert, 1983c; Hiebert & Eby, 1985; Orlick, 1993).

Researchers agree that many potential problems could be avoided and benefits gained if children were taught effective means to cope with stress (Couille, 1979; Krampf, Hopkins & Byrd, 1979; Humphrey & Humphrey, 1985; Setterlind, 1983; Webb, Meckstroth & Tolan, 1983; Kraft & McNeil, 1987; Brandon, Eason & Smith, 1986; Honig, 1986; Orlick, 1986, 1993; Gunnar, 1987; Smith & Womack, 1987; Dise-Lewis, 1988; Angus, 1989; Ryan, 1989; Solin, 1991).

Although many studies have been completed in the area of children and stress, intervention programs have lacked an element of playfulness and creativity that

children so desire.

The purpose of this study was to implement and test the effectiveness of a relaxation/stress control program which was designed specifically for children. The intent of the intervention program was to teach children relaxation and stress control strategies in a playful, fun and creative way (Orlick, 1993). The goal was twofold: 1) to teach children how to relax effectively and 2) to teach children stress control strategies that they would use successfully in their daily lives.

REVIEW OF LITERATURE

Definition of Stress

It is inevitable that children, like adults, will face stressful events in their daily lives. Unfortunately, many children grow up having never acquired skills to cope with stress.

What is stress?

Hans Selye (1956), author of the stress concept, proposed that stress is a state manifested by a syndrome consisting of nonspecific induced changes within a biologic system. In other words, Selye believed that stress is a syndrome which has no specific cause; it is the common results of wear and tear on the body as one proceeds through life. Selye saw the organism's generalized response, which he called the general adaptation syndrome, as a stress syndrome. For Selye, adaptation was a key concept. Life, he maintained, was largely a process of adaptation. It was through the general adaptation syndrome that one's body helped him/her to adapt to the constant changes in his/her environment. This great researcher also believed that stress is a factor in the

development of numerous degenerative diseases and it was for this reason that further interest was stimulated in researching the topic.

Edmund Jacobson (1978), the originator of progressive relaxation in the 1930s, noted that emotional problems are often the result of tension in the body, and that muscular relaxation might have a positive effect. Jacobson defined tension as "the effort that is manifested in shortening of muscle fibres" (Jacobson, 1978), and believed that tension disorder was the most common malady that man experienced.

Throughout the 1950s and 1960s stress began to be increasingly studied in a broader psychosocial context. Stress, as Selye (1956) noted, was an inevitable part of life and no longer limited to the narrow association with traumatic events.

With researchers well aware of people attempting to deal with stress daily, came the notion in the late 1970s that stress is a reaction which exceeds one's perceived abilities to cope with a situation (Cox, 1978).

Hiebert (1983) supports this stress concept and has completed extensive research in the area of stress and one's perceived abilities to deal with it. As Hiebert (1988) notes, if one believes he/she can handle the demands satisfactorily, relatively little stress will be experienced. On the other hand, even if the demands are low, if one believes he/she cannot handle the demands satisfactorily, then stress levels may be quite high. One's coping resources impact the amount of stress one endures.

All children, in the course of growing up, will experience some of life's inevitable stresses (Chandler, 1985). Unfortunately, many parents and caretakers contribute to causing children even more stress than is natural. Due to the demands of today's society, many parents are unloading their responsibilities onto their children in an attempt to reduce some of their own stress. Elkind (1988) states that we are doing our children harm by treating them as adults and forcing them to grow up too soon. "Today's child has become the unwilling, unintended victim of overwhelming stress--the stress borne of rapid,

bewildering social change and constantly rising expectations" (Elkind, 1988, p.3). Stress among children is becoming an issue of increasing concern to teachers, parents and counsellors.

High levels of stress threaten the quality of life and psychological well being for both adults and children (Cox, 1978). It is important to consider first, what causes stress and the consequences of it, and second, effective methods for coping with stress.

Causes of Stress

An important distinction was made in 1956 by Dr. Hans Selye, between a stressor and stress. A stressor, as Selye describes, is an event that initiates the stress process; the immediate reaction following the event is the state of stress.

To help children cope with stress, the stressors that they experience must first be considered.

According to Selye (1978), stressors are situations, events or people producing stress reactions in a person. Examples of stressors for children include death or illness of a parent, divorce, birth of a sibling, changing schools, academic failure, physical

problems and peer pressure (Selye, 1978). Although not as severe, other stressors for children must also be considered, including, fighting and arguing with siblings, getting yelled at by parents, making and maintaining friendships, school work, being harassed by bullies at school, pressure situations in sport, play, games, and many more.

Children engaged in sport competition are often negatively influenced by stress. The stress placed upon children in these situations, with coaches yelling at them, interactions between players, the level of competition, spectators' influence, and the environment itself, is often enough to hinder their performance.

Brenner (1984), reports that the number and intensity of childhood stresses dramatically increased from the early 1970s to the 1980s. Many more children now live with only one parent, more children are experiencing abuse and neglect, more children are living in poverty, and there is a growing trend among parents to push their children to excel at an early age.

Dickey and Henderson (1989) conducted a study with

elementary school children to identify stressors and coping strategies in the elementary school setting. The main stressors were school work, peer relationships, homework, injury, loss, discipline, relations with teachers, and family. Dickey and Henderson's study (1989) as well as a study by Ryan (1989), indicates that children lack the skills for coping with stress in positive ways. Students with greater coping resources report less stress (Hiebert & Allen, 1991).

Consequences of Stress

Children, like adults, react to stress in many different ways. Most children at some time react to stress with temporary behaviour disorders, such as nightmares, bedwetting, temper tantrums, or excessive fears (Wolff, 1981). It is when the stresses become overwhelming for the child and he/she feels that he/she can no longer cope with them, that serious difficulties may arise.

As Orlick notes (1993), stress is a part of life, and if not dealt with effectively, can hinder one's mental and physical health, interfere with one's

relationships, remove happiness, and can eventually cause death. Stress can increase irritability, susceptibility to illness and disease, lower resistance, and interfere with recovery from mental and physical setbacks.

Stress, in the absence of effective coping strategies can have detrimental effects physically, psychologically, socially and behaviourally. General physiological changes are brought about by the body's reaction to stress. In the case of prolonged or severe stress, these changes can affect the health of the child (Orlick, 1993; Chandler, 1985).

In that children in today's society are believed to be facing more stress than ever before (Elkind, 1988), and stress related disorders are rapidly increasing (Hiebert & Eby, 1985), it is imperative that children begin learning effective stress control strategies, for life.

Coping with Stress

Coping normally refers to an active process which occurs in the course of attempting to adapt to environmental conditions that involve stress (Levine,

in Garmezy, Norman & Rutter, 1983).

As stress is a part of life, so too is coping with unexpected events and adapting to long-term changes (Selye, 1974). As Brenner (1984) notes, having control in coping can be helpful in dealing with stress.

Babies begin to cope as soon as they are born. As they grow older, they use the same coping patterns and simply adapt them. Often children are not even aware when they are coping with stress although they are imploring their own coping techniques. As Garmezy, Norman and Rutter (1983) mention, the coping process is an individualized response to stress. These authors state that many factors contribute to one's coping strategies, including age, gender, genetic factors, temperament, social skills, and cognitive ability to appraise a stress event. Unfortunately, many of children's coping techniques such as denial, regression, withdrawal, impulsive acting out, altruism, suppression, anticipation, or sublimination (Brenner, 1984) may be negative and inadequate. Honig (1986, Part 1) suggests that avoidance strategies are the most common method of coping for all children.

Hiebert and Eby (1985), who studied rising trends in stress-related problems for young people, declare that alternative approaches to stress control must be explored. They believe that training in relaxation and other stress control procedures could help young people with the stress they experience as well as preventing more serious stress-related problems in later life.

The literature supports that it would be beneficial to teach children positive coping strategies and to teach children how to transfer the coping strategies into other life situations.

Many different stress reduction techniques exist; a thorough review of them will be conducted.

Stress Reduction Techniques

Hiebert's (1988) model for stress control includes two main perspectives, stressor management, aimed at coping with demands more easily, and stress management, focusing on reducing physiological or cognitive reactions. The stressor management aspect of the model includes reducing demands, increasing coping resources, and acquiring additional stressor management procedures.

The stress management component is beneficial to help one remain more calm in situations where one's coping resources are strained. Hiebert's component of stress management includes physiological, cognitive and behavioral approaches to assist one in coping with stress.

In a review of stress reduction techniques, Jacobson's (1978) work must first be considered. Jacobson introduced progressive muscular relaxation in the 1930s and not only is it still the technique most often referred to in the literature, but it is probably the one technique that has the most widespread application. Jacobson believed that people wasted effort when they were stressed, rather than operating economically and efficiently. He stated that people must learn how to relax and that the state of relaxation was a complete absence of all contractions in the muscles. This concept led to progressive muscular relaxation, Jacobson's method whereby one becomes aware of muscle tension throughout the body. The process involves alternately tensing and relaxing various muscle groups with an emphasis on perceiving

the transition from tension to relaxation. Through performing this technique with successive muscle groups, deep muscular relaxation is achieved.

More recently, it was discovered that biofeedback could be used to induce muscular relaxation. Blais and Vallerand (1986) conclude that young participants can learn to relax specific muscle groups through biofeedback. This process provides electronic signal detection of physiological variables such as electromyographic potentials, skin temperature, galvanic skin response, and electroencephalographic potentials. It involves self monitoring through the use of audio and visual equipment. The participant uses the equipment to get feedback on his/her own state and attempt to relax muscle groups according to it.

Concentrative meditation (Smith & Womack, 1987) is a procedure where one narrowly focuses the attention of the mind onto a sound or symbol. Benson's (1975) relaxation response is a widely used technique in this area and encourages the participant to focus on the word "one". The relaxation response is a technique

involving a number of bodily changes that occur when one experiences deep muscle relaxation. It is a response of "overstress" and enables the body to return to its healthy balance.

Lewinsohn et al (1978) are strong supporters of Benson's relaxation response, and believe that learning to relax is similar to learning to cook as it takes regular practice. Through relaxation, one gains more control over his/her body, is able to recognize tension and induce a relaxed state.

Lewinsohn et al (1984) incorporated the use of relaxation for depressed children. They used Jacobson's progressive muscular relaxation procedure and Benson's relaxation response. These authors instructed students to self monitor their tension levels and different times of the day. By recognizing patterns and incorporating the two techniques, the students were able to reduce their tension levels.

Day and Sadek (1982), investigated the effect of Benson's relaxation technique on the stress of sixty two fifth grade Lebanese elementary students. Following a six week intervention, their results

successfully concluded that those in the treatment group scored lower on a general anxiety scale; although, it is interesting to note that in the follow-up phase three weeks after the completion of the study, the treatment effects had disappeared.

Hypnosis is related to concentrative meditation as it also involves an altered state of awareness. Hypnosis (Smith & Womack, 1987) allows one to accept suggestions promoting perception or behaviour which is ultimately compatible with the subject's desires. Once subjects become familiar with the process of hypnosis, it is useful for many to continue with self-hypnosis. Although these authors suggest that hypnosis is a useful means for children to relieve themselves of stressful symptoms, this author questions children's ability to perform this method with little guidance.

Hans Selye contributed to a relaxation technique for children known as The Humphrey Program (Humphrey & Humphrey, 1980). Selye believed that it was important to begin teaching children about stress at a very early age, because all behaviours sink in best if a tradition is established. Humphrey and Selye conducted a study

with one hundred children to discover appropriate language to use to educate children about stress. Through their research they devised a story, "Ted Learns About Stress" (Humphrey & Humphrey, 1985) and published it with audio tapes to distribute to teachers. The story helps children to understand certain broad concepts of stress, but does not give examples of stressful events. In fact, for the length of the story, the only concept it really gets across is that worrying can be bad for our bodies. The story could be very useful if improved, but remains vague, offering no methods on how to relax or advice for coping with stress.

An improvement in this area lies with Bedford (1981) and his use of the story "Tiger Juice". This approach combines relaxation and desensitization. It involves the use of a children's booklet that outlines and illustrates the evolution of stress reactions, the physiology and function of stress, and simple ways to manage stress through relaxation. This method includes the use of progressive relaxation, autogenic training, meditative procedures and imagery.

Using imagery in relaxation gives the child an opportunity to visualize and enjoy a situation by creating his/her own image of it. In addition, the use of imagery in relaxation is a joyful experience for a child.

A further method for children to learn relaxation through imagery is Humphrey and Humphrey's technique (1985). These researchers have developed unique methods to help children relax through creative movements. These include combining imagery with tensing and relaxing muscles. Simply put, the children perform contrasting creative movements, such as being hard like a rock, then soft like a pillow, to give the effect of tensing and letting go.

Similar to Humphrey and Humphrey's work is that of Robert McBrien (1978). McBrien also developed relaxation techniques for children through the use of imagery. This author instructs the children to relax, imagining that they are lying in tall green grass looking up at the sky and thinking pleasant feelings of relaxation. This researcher also uses games to teach relaxation, modifying the traditional "Simon Says" game

to include instructions for progressive muscular relaxation.

Zhang, Ma, Orlick and Zitzelsberger (1992) combined mental imagery training with relaxation in a study with seven to ten year old table tennis players. Among many findings, these authors included that combining relaxation with mental imagery can contribute to performance enhancement for children. This is yet another benefit of relaxation that must be considered for children.

Another approach involving imagery is a well know relaxation technique for children, the Kiddie Quieting Reflex (Stroebel, 1980). This technique was originally designed for adults and eventually adapted for children. It is considered to be an educational preventative method in helping children aged four to nine deal with stress. The program is divided into sixteen experiential elements on tapes of three to seven minutes in length. This method utilizes imagery to perceive rising tension in the body and encourages one to initiate action to relieve the tension. The instructions for this method include many ideas such as

breathing through magic holes in one's feet. Although the approach is an illustration used to help children grasp the complex idea of mind/body integration, it is a passive learning experience for children. It does not involve active learning and thus the extent to which children will continue to use this approach on their own is questioned.

A further technique used for children is behavioral relaxation training. Donney and Poppen (1989) conducted a study to teach three sets of parents to implement behavioral relaxation training with their hyperactive children. The behavioral relaxation training included modelling, prompting, token reinforcement and praise, for ten overt related behaviours. Electromyographic biofeedback measures were used to record the boys' muscle tension. All children in the study learned to relax and it was indicated that behavioral relaxation training is a solid method for teaching hyperactive children to relax.

Brandon, Eason and Smith (1986) also conducted a study using behavioral relaxation training. Their

study involved learning disabled children with hyperactive behaviours and it was concluded that behavioral relaxation training is fun, easy to learn, instructionally efficient, and beneficial for teaching learning disabled males to relax.

Another relaxation technique is autogenic training.

This method utilizes autosuggestion with the goal of reaching a relaxed state (Luthe, 1977, from Chang, 1991). The basic program consists of six standard exercises, including suggestions of limb heaviness, limb warmth, reduced heart rate, reduced respiration rate, abdominal warmth, and forehead cooling. In this method, one gets comfortable and repeats a specific self suggestion, such as: "my arm is comfortable and heavy". By focusing attention on the bodily process described in the self suggestion, one reaches the desired effect of relaxation.

Angus (1989) also incorporates self suggestion into his approach to teaching stress management for children. His method emphasizes guided fantasy, yoga and autogenic phrases.

Angus describes guided fantasy as an approach where one imagines himself/herself in situations which portray feelings of calmness and comfort. The three phases included in this approach are relaxing, fantasizing and processing.

Angus' second component is the use of Hatha yoga for children to reduce stress. Hatha yoga promotes body awareness through the use of breathing exercises and specific poses. Angus claims that one who practices yoga effectively, will acquire the skills needed to induce relaxation. As yoga focuses on the present, one's stress should be reduced as they let distressful feelings about the past and anxiety about the future, vanish. The author describes the process where the yoga consultant helps the children develop a quiet, calm atmosphere. A number of poses are then learned and practised within this atmosphere.

After completing the series of poses, the children lie on their mats and are led through a series of autogenic phrases. The phrases guide the children to focus on each part of their body, relaxing as they proceed.

Yoga and autogenic phrases require heavy concentration to reach a deep state of relaxation, a process which may be difficult for many children to manage.

In contrast to this complex approach for children is the model presented by Martin (1988). Martin's theoretical model of stress and coping includes the simple notion of nonhostile, self-accepting, realistic humour and laughter as a healthy coping strategy. This author believes that parents, teachers and other caretakers should encourage the development of a healthy sense of humour in children, as it is an important element in their coping repertoire for dealing with stress.

Another basic approach is using fairy tales to help children with stress reduction (Lubetsky, 1989). Lubetsky reveals the meaning, usefulness and importance of fairy tales in reducing children's anxiety in his psychodynamic oriented review. Lubetsky suggests that fairy tales can be used as a therapeutic tool as the stories can confront real conflicts in children's lives and lead to the reduction of anxiety.

A stress reduction strategy that can be implemented at a very early age involves using music. Marley (1984) examined the effectiveness of music in decreasing stress behaviours exhibited by hospitalized infants and toddlers. He determined that music effectively helped the infants and toddlers obtain relaxation and sleep. This indicates that incorporating music into relaxation techniques may be beneficial for children, although Marley's results may have been attributed to the music therapists interaction with the infants and toddlers.

A further stress reduction method for children involves the use of films and positive self talk. McMurray et al (1986) studied the effects of coping strategies on dental stress in children. They found that through utilizing coping films and positive self coping statements, children were able to reduce their self report dental anxiety.

An effective method for children to cope with stress is through games. Orlick and Pitman-Davidson (1988) claim that cooperative games induce a stress free atmosphere and gear away from structured

competitive games which cause many children more stress than enjoyment. Cooperative games induce a stress free atmosphere with an emphasis on working together rather than winning. These researchers suggest that the need to compete and awards for winning should be removed from games. Instead, the object, as in cooperative games, should be for everyone to work together toward a common goal. In handling play in this positive approach, cooperative games can be a suitable outlet for children to deal effectively with stress. If appropriate play environments are provided for children, then the opportunity for stress reduction has been created.

Kraft and McNeil (1987) support these ideas and believe that play, if handled properly, is a natural mode for children to deal effectively with stress. These researchers suggest that relaxation and tension reduction activities be implemented into elementary physical education classes.

Humphrey and Humphrey (1985) also support reducing children's stress through preventive measures. They believe that stress management for children should be

directed toward maintaining a healthy lifestyle. Parents should be concerned with their children's health and fitness. Parents should closely supervise their children's eating habits, exercise levels, and amount of sleep and rest, as stress-initiated disorders are often linked to these factors.

Another researcher, Stroebel (1980) suggests that children's stress reduction strategies should focus on physical and mental health. Stroebel believes that preventive stress control programs should be implemented in the regular school curriculum.

Various attempts have been made at educating children about stress and relaxation but few of these interventions have been child like in design and implementation (Hiebert, 1988; Jacobson, 1978; Blais & Vallerand, 1986; Smith & Womack, 1987; Lewinsohn et al, 1984; Day & Sadek, 1982; Humphrey & Humphrey, 1980, 1985; Bedford, 1981; McBrien, 1978; Zhang, Ma, Orlick & Zitzelsberger, 1992; Stroebel, 1980; Donney & Poppen, 1989; Brandon, Eason & Smith, 1986; Luthe, 1977; Martin, 1988; Lubetsky, 1989; Angus, 1989; Marley, 1984; McMurray et al, 1986; Kraft & McNeil, 1987).

After a thorough review of the literature, Orlick's 1993 relaxation/stress control program was chosen for this study as it appears to be the most extensive and child centered intervention program in the area.

Children Coping with Stress in Sport and Play

As previously mentioned, sport and play are often stressful for children. Wilson (1984) suggests ways in which parents and coaches can help children deal with the stress factors found in competition. By recognizing stress symptoms in children and adhering to the following suggestions, parents and coaches can help children to enjoy competition and stress in children's competitive sports could be significantly reduced.

Wilson suggests that parents and coaches: place children in positions on teams that are compatible with their personalities and their mental, physical and emotional abilities; practice in new environments to reduce the stress of competition in new environments; avoid frequently removing children from the game following a mistake; give children feedback and instructions only when it is appropriate; encourage children to focus on small goals when they lose or feel

negative; and encourage children to develop their own routines for remaining calm.

Orlick (1986) states that stress control will play a key role in children's sport in the future. Orlick suggests alternate game structures and modifications in existing sports for reducing children's stress in sports. Orlick suggests that stress control programs be made available for children in sport. This would aid them in coping with the stress of games, errors, unmet goals, wins and losses. They would learn to improve their emotional control while enjoying the games. Orlick suggests that the learning of life skills through games can be carried on into helping children cope with stress in other aspects of life, such as in school, on the playground, at home, and on the street.

Orlick and Botterill (1975), in Every Kid Can Win, focus on the feelings of young children in sport, and make excellent recommendations for parents, teachers and coaches to make the sport environment more positive for children. They discuss issues in organized sport for children and if many of their recommendations were

implemented, it is probably that the stress which children normally endure in these situations, would be reduced.

Many of Orlick and Botterill's recommendations should be considered in the school setting. A range of studies in the area of stress control for children have been completed in the school setting, with children of all ages.

Stress Control Studies for Adolescents

Hiebert and Eby (1985) implemented a relaxation program for grade twelve students. The students completed log sheets and submitted a final self-report essay. Hiebert and Eby concluded that progressive relaxation and self hypnosis training using audiotapes was effective in reducing anxiety levels.

Hiebert (1991) completed further research in this area and on a larger scale, by administering a study with grade ten and twelve students. They found that adolescents with greater coping resources demonstrated lower levels of stress and less frequent stress symptoms. They also noted that stress levels in adolescents are higher and their coping resources are

lower than the population at large.

A case study in the area demonstrates the reduction of stress through relaxation. Culbertson and Hatch (1990) implemented a relaxation program with an anxious grade eleven girl. They combined progressive relaxation and imagery to attempt to alleviate stress anxiety in the student. The results of the study show that the students' stress levels were reduced.

Hiebert, Kirby and Jaknavorian (1989) administered three studies with high school students involving progressive relaxation. Findings suggest high school students can learn relaxation and that such learning is accompanied by changes in both physiological and cognitive measures.

Stress Control Studies for Children Within Schools

Setterlind and Patriksson (1982) conducted a six week study with Swedish elementary school children, teaching various methods of relaxation. They concluded that children are able to learn to relax and that they have different preferences in relaxation techniques.

Zaichkowsky and Zaichkowsky (1984), evaluated the effects of a six week relaxation training program on

fourth grade children. The findings in this study indicated that they found that the children could learn stress control techniques within a six week period and influence both physiological and psychological states within the intervention setting.

Oldfield and Petosa (1986) conducted a study with children between the ages of five and twelve and found that relaxation increases their on-task classroom behaviour. This study indicated that relaxation skills positively influenced the children's ability to focus or be attentive in a school setting.

Measuring Children's Perceived Anxiety/Relaxed State

In implementing a relaxation program for children, one inevitably would like to discover if the children feel less anxious following the program and if they feel less stressed, or more relaxed. Self-report can be a beneficial tool in answering these questions. The State-Trait Anxiety Inventory for Children (Spielberger, 1973) has been used widely over the last twenty years. This questionnaire is used to study anxiety in elementary school children. It measures both state anxiety, which includes perceived feelings

of apprehension, tension and worry, and trait anxiety, which is probably increased when a child experiences failure or personal adequacy is evaluated. Although this inventory, along with many similar others are considered legitimate tools, their validity can be questioned. Do grade one and two children really understand the questions on such inventories? Have researchers taken the time to go over each question with each child to ensure its meaning is understood?

Most inventories have been designed in adult language without considering whether or not children actually understand them.

Summary

After a thorough review of the literature, it was felt that the only relaxation/stress control intervention program that does full justice to children is Orlick's program, 1993. Many others use techniques and approaches that were designed for adults such as progressive muscular relaxation, diaphramic breathing, imagery, biofeedback, yoga and meditation. Contrary to Orlick's program, they are not playful, imaginative or fun, nor were they created specifically with the

child's perspective in mind. Thus Orlick's 1993 program was chosen and presented through the use of audio-tapes (Orlick & McCaffrey, 1993 a,b,c).

RESEARCH METHODS

The purpose of this study was to implement and test the effectiveness of a relaxation program which was designed specifically for children. The intent of the intervention program was to teach children relaxation and stress control strategies in a playful, fun and creative way (Orlick, 1993). The goals were threefold: 1) to assess the extent to which the children enjoyed the activities in the relaxation/stress control program, 2) to assess the extent to which children learned to relax themselves "at will" as indicated by heart rate measures and 3) to assess the extent to which children utilized the various relaxation/stress control strategies (taught in the program) in their daily lives.

Hypotheses

It is expected that children who receive the relaxation intervention program will learn how to relax. These children will be able to lower their heart rates in a one minute test moreso following the intervention program than before. The children in the intervention program will be able to explain to

interviewers how they are using the relaxation techniques usefully in their daily lives. The children in the intervention program will enjoy participating in most of the relaxation games.

Significance

Many stress control programs exist for children but no programs exist that do children full justice. Existing programs are mostly geared toward adults, without a consideration of the child's perspective. Although they may be somewhat effective, they are dull and mundane for children, and thus the likelihood that children will continue to use the techniques on their own in their daily lives is poor.

Children learn most when they are having fun and it is for this reason that this study will implement the most recent relaxation techniques for children designed by Dr. Terry Orlick at the University of Ottawa (Orlick, 1993). Orlick's relaxation games for children are fun and interesting and teach the basic concepts for children to relax.

This study has large implications in that if successful, will demonstrate that similar studies

should exist within the school setting.

Stress plays a large role in the life of a child and children must learn how to cope with stress and how to relax. This study is designed to improve the quality of children's lives. If children acquire coping skills at a young age, they have gained skills to aid them throughout life.

Subjects. The subjects for this study consisted of two intact classes at each grade level from kindergarten to grade 6 from a middle-class city school in Ottawa. Two hundred and sixty-six children were involved in the research project: 146 children in the experimental group and another 120 children in a control group.

Intervention. This study's author conducted the intervention program in the classrooms with the regular teacher in attendance in the classroom. The students in the experimental group participated in the experimental program. The students in the comparison group participated in pre and post testing and otherwise followed their normal classroom schedule.

Orlick's relaxation/stress control intervention program was introduced to the experimental group in

twenty minute sessions, three times per week, over a period of 10 weeks. Students were taught a series of relaxation activities along with basic concepts about stress and relaxation.

One of the following relaxation/stress control activities was incorporated into each session and presented on audio tape (Orlick, 1993; Orlick & McCaffrey, 1993a):

Spaghetti Toes (6:00) - wiggle and relax each body part making it feel like warm, soft spaghetti.

Jelly Belly (4:09) - perform abdominal breathing to fill up jelly belly (stomach) and empty it.

Echo Lake (4:41) - repeat positive statements to yourself or out loud (e.g. I am relaxed, I am strong).

Quiet Lake (2:20) - imagine yourself relaxing next to a beautiful, quiet, calm lake.

Butterfly/Flutterby (2:00) - imagine a butterfly fluttering and floating gently in the air.

Floating on Clouds (3:20) - imagine yourself floating on big, soft, fluffy clouds.

Soaring (3:26) - imagine yourself soaring like a seagull.

Standing Relaxation (4:55) - relax various muscles and breathe easily and slowly while standing.

Special Place Relaxation (3:28) - imagine your own special place, one that is very relaxing.

Flowing Stream (4:51) - imagine yourself flowing like a little stream around rocks and obstacles.

Relaxed Breathing (3:38) - breathe easily and slowly.

Muscle Relaxation (4:30) - think into various muscles and relax them.

Follow Your Breathing (3:45) - breathe easily and slowly, listening to the sound of your own breathing.

One Breath Relaxation (3:37) - take one deep breath in, let it out, and relax.

Star Track (6:49) - imagine yourself on a space voyage floating in space.

The Peaceful Sea (3:13) - listen to relaxing music with sounds of gentle waves and seagulls.

Tree It (3:17) - put worries away and replace them with positive and happy thoughts.

Changing Channels (2:10) - change mental channels from being negative to positive, worried to relaxed,

unhappy to happy.

Reminders For Feeling Good (3:00) - listen to seven key reminders about how to be positive with yourself and others.

The children were encouraged to use the various relaxation/stress control techniques on their own, at home or outside the classroom. Ongoing follow-up discussions were incorporated into the program to share how they had used the techniques outside the classroom and how it had worked.

Logbooks were used once per week during regular intervention sessions, and three times per week on the children's own time (usually allotted by the regular classroom teacher). Children recorded stressful experiences, coping strategies attempted, relaxation experiences and other techniques administered on their own, in their logbooks. Logbooks were used to promote discussions at the beginning of each relaxation session. Children were given the opportunity to share stressful experiences and relaxation activities that they implemented on their own.

The children also made up their own list of

stressful experiences (Table 1) as well as a list of positive ways to deal with stress (Table 2).

Logbooks were collected and monitored weekly. Written feedback was provided to the children in their logbooks to point out their progress and encourage them to continue using positive strategies.

Instruments.

Heart Rate Monitors. To measure the physiological effects of the relaxation training, pre and post testing was conducted using DT 1000 heart rate monitors. The DT 1000 is a simple light weight heart rate monitor which clips to the ear lobe. When validated against the Vantage XL - Polar sport tester, it proved to be 97% accurate.

Relaxation Logbook. A relaxation logbook was given to each child in the experimental group to determine the extent to which they were affectively applying the relaxation/stress control strategies in their daily lives. In their logbook children recorded any stressful experiences, how they felt during the stressful experience, whether they tried to relax or do anything else to make themselves feel better, and if so

how they felt afterwards (ie. how well it worked). The children kept an updated list of all relaxation activities implemented in the intervention program to refer back to.

Cat Scale. A subjective measure of stress vs. relaxation was devised for the purpose of this study. It consisted of a 5 point scale ranging from very stressed to very relaxed. Each point on the scale was represented by a cat depicting various degrees of tension and relaxation.

Insert Figure 1 about here

Kite Scale. A five point face scale ranging from really like it to hate it was used to determine the extent to which the children liked or disliked the various relaxation and stress control activities.

Insert Figure 2 about here

Interviews. Individual interviews were conducted with all children in the experimental group to gain indepth

information pertaining to the extent to which children were using relaxation activities in their daily lives (if at all) and to assess how the children felt about the relaxation/stress control program. Interviews were conducted by researchers who were not involved in teaching the relaxation/stress control program.

Questionnaires. One page questionnaires were given to the teacher and parents of children in the program to gain indepth information pertaining to the feedback that they received from the children with regards to the program, including the extent to which they thought the children were using the relaxation activities in their daily lives.

Results.

Pre and Post Tests. Two pre tests were administered to both the experimental and control groups. The instructions for the first pre test were for the children to sit at their desks, get comfortable, close their eyes if they wished, and "relax for one minute".

Children worked in partners. One partner relaxed while the other recorded his/her partner's heart rate, before and after the one minute of relaxation, on

designated sheets. The researcher raised her hand when one minute had commenced and raised her hand again at the end of one minute. This ensured that she did not influence the children's heart rates. The recording children watched her hand and then recorded the heart rate reading on the sheet.

Pre test two followed the same procedure except the children were instructed to "relax the best way you know how" for the timed minute.

Pre test three involved only the experimental group. Children were instructed to "relax while listening to the relaxation activity on the audio tape". The relaxation activity was "Floating on Clouds" (Orlick, 1993).

Post test one was identical to pre test one. This post test was intended to show the differences in the children who have learned the ability to relax (experimental group), as compared to the children who have not (control group).

Post test two was identical to pre test two. This post test was intended to show the differences in the children who have learned to relax using their own

methods (experimental group), as compared to the children who have not (control group).

Post test three was identical to pre test three, involving only the experimental group. Participants relaxed to the same audio tape as in pre test three. This post test was intended to assess possible differences in the experimental group's ability to relax while listening to a relaxation activity on audio tape, as compared to the pre-test.

Heart Rates.

The experimental group's heart rates, pre and post, was compared to the control group's heart rates, pre and post. The experimental group's pre test heart rates were also compared to the experimental group's post test heart rates. Firstly it was determined if the group who received the intervention displayed the ability to decrease their heart rate better than the group who did not receive the intervention. Secondly, it was determined if the group who received the intervention improved their ability to decrease their own heart rates through relaxation as compared to before participating in the intervention. A

descriptive analysis of the results was implemented to determine the results.

Relaxation Logbook. The relaxation logbooks were examined by the researcher to determine the extent to which subjects employed the relaxation activities in their daily lives.

Cat Scale. The cat scales were examined by the researcher to determine the various degrees of relaxation and stress of the participants before and after the relaxation and stress control activities.

Kite Scale. The kite scales were examined by the researcher to determine the extent to which the children liked or disliked the various relaxation and stress control activities. Kite scale ratings are recorded in the intervention section of this study.

Interviews. Interview data was utilized to gain qualitative feedback as to how much the participants used the relaxation techniques on their own, and to the extent that the program may have helped them. Before the program began, students as a class were asked if they were currently practising relaxation techniques, why and when. Follow up interviews were conducted with

those who were.

Questionnaires. Questionnaire information was utilized to gain qualitative feedback pertaining to the extent that the teacher and parents of children in the program acquired feedback from the children with regards to the program, including the extent to which they thought the children were using the relaxation activities in their daily lives.

DISCUSSION

This section is comprised of findings from the research.

If children learn appropriate coping skills to reduce their anxiety and stress levels, hopefully they will carry these methods on into later life.

A successful program in this area could have tremendous implications. If the children acquired the ability to relax on their own, they could use this skill in many domains, including when encountering stress in the classroom, in the playground, at home, with friends, in sport and in general, in life. Through learning enjoyable relaxation techniques, it is probable that the children would want to practice the techniques on their own and use them to help them in their daily lives. Although they may acquire the ability to relax using other effective yet adult oriented techniques, the likelihood of the children continuing to use them on their own is poor. If indeed learning relaxation skills can be acquired successfully at an early age, the implication stands that educational institutions should give serious

considerations to implementing fun and enjoyable relaxation programs into the school curriculum. The benefits of such a program extend widely to all school children, and may even be geared toward improving their quality of life.

Brandon, Eason and Smith (1986) suggested that being in a relaxed state may facilitate performance on an attention demanding task. This supports Jacobson's (1978) view that relaxation can facilitate an optimal state of arousal for attention-demanding tasks. Similar findings in this study support that when children are relaxed, their full focus improves.

The concepts, "can't do magic", "changing channels", and "tree it", are fun and simple coping mechanisms which were effective in helping children to change their focus from negative or stressful thoughts to something more positive or constructive. By teaching children how to deal with their stress in healthy ways, they developed important stress control skills that they carried with them into a variety of situations in school, in the playground, at home and in sport.

Edwards and Miller (1988) attempted to teach elementary school children theoretical and practical aspects of stress management, with an emphasis on progressive muscular relaxation, guided imagery, stretching and autogenic phrases. The researchers did not find significant decreases in the children's heart rates or changes in their perceptions of their abilities to handle stress following the study. These authors conclude that children may be too immature cognitively to experience positive changes.

The findings of the current study clearly demonstrate that when activities and programs are designed specifically for children, children are capable of 1) learning a variety of relaxation/stress control strategies, 2) understanding basic stress control concepts, and 3) using these concepts in a variety of settings. Activities must be simple, enjoyable and stimulating for children if they are to be motivated to do them and focus fully on the desired objectives.

When working with children, researchers must consider the fun-aspect of activities, creative ways of

communicating basic concepts, and simple ways to demonstrate the practical benefits of the skills being taught.

There are many educationally sound reasons for teachers becoming involved in helping children cope with stress. Stress interferes with focusing, classroom management and learning. As Blom, Cheney and Snoddy (1986) point out, many children respond to stress by acting out and essentially hinder the learning of all of the children in the classroom.

Sweden is the only country in the world that implements relaxation training into its regular school curriculum (Setterlind, 1983; Solin, 1991). Sweden has been implementing mental skills training programs with school children for a number of years. We have much to gain by studying Sweden's stress control programs, although they also have weaknesses. Playfulness is a motivating factor in children's learning, and the Swedish stress control programs lack in this area.

RECOMMENDATIONS

The elementary school system is a logical place to teach relaxation/stress control skills to children for preventive purposes. Teachers could incorporate the program into the regular curriculum and both teachers and students could benefit.

In further research with children grades 6 to 10, Setterlind (1983a) concluded that the majority of the pupils in the relaxation study learned how to relax, and that they thought they could continue on their own.

In a subsequent study with seventh grade students, Setterlind (1983b) studied the effects of relaxation on the students' recovery phase after strenuous activity on a bicycle ergometer. Setterlind concluded that better breathing rates and subjective experiences of rest and recovery were significantly better for the treatment group.

The recommendation emerging from these studies was that programs should exist in schools where children learn existing techniques for preventing and coping with stress.

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Appendix B

Relaxation Logbook

(Cox, Zitzelsberger, & Orlick, 1993).

The relaxation logbook is a self monitoring tool which will enable us to understand what children perceive to be stressful, how they feel before and after stressful events, and ways in which children cope with stress. The logbook will also tell us whether children are using the relaxation procedures learned during the program and how effective they are.

Children will be asked to fill out the logbook on a daily basis. The logbook consists of three simple sheets - one blue, one yellow and one white. For each stressful event children experience they will be asked to fill out a blue sheet. If no stressful event has occurred that day or if they have tried a relaxation exercise for a reason other than feeling stressed, the children will be asked to fill out a yellow sheet. There is a third "open" sheet where the children can record feelings about any of the stressful events, details about the relaxation activity they used (ie. where they did it, how it went, if they liked it), or

anything else they wish to record for that day.

For the duration of the program, children will be taught relaxation activities daily three days per week and will fill out daily logbook sheets which the relaxation instructor will collect. Children will keep their logbooks, although they will be collected every Wednesday and returned the next day. Every Wednesday heart rates will be taken with the heart rate monitors before and after the relaxation activities. Heart rates will normally not be taken on Mondays and Thursdays.

The following is an outline of how children will be introduced to the logbook questions:

BLUE LOGBOOK SHEET:

Logbook Question One: Did anything stressful happen?

The children's vocabulary related to their experience with stress will be explored as a group. Children will be asked to describe their feelings related to stress. (e.g. mad, upset, frustrated, worried, scared, etc.) The meaning of the term 'stress' will be discussed. This discussion will include not only stressful things that happen, but

things that may be perceived as stressful that do not have to be stressful. Ie. At the beginning of the program a student may say she gets stressed if she makes a mistake. By the end of the program that same student may make a mistake which may have been stressful, but because she now has methods to deal with it, she does not necessarily feel stressed when it happens. In this case, she would still list that potentially stressful situation and her feelings related to it on the blue sheet.

Logbook Question Two: What happened?

As a group, the class will discuss the things that make children feel stressed. This discussion will help to emphasize that some of the things that cause children to feel stressed are common to many children while others are unique. A list of the things which stress children will be generated from the class discussion and included as part of the logbook. Children will be encouraged to add to or personalize the list. This personalized list will serve as target areas to focus on for stress reduction.

Logbook Question Three: How did you feel when this

happened?

Ways in which different people respond to stressful events will be discussed in class. The differences between the cats on the cat scale will be discussed.

Logbook Questions Four and Five: Did you do anything to feel less stressed? What did you do?

As a group, the class will discuss the different things that children do to cope with stressful events, including activities which will be taught in class. A list of good things to do to cope with stress will be generated and included as part of the logbook. This list can serve as a reminder for ways to better cope with stressful events.

Logbook Question Six: How did you feel after you did this?

The effective different strategies for different people will be discussed. Differences between the cats on the cat scale will be reviewed.

YELLOW LOGBOOK SHEET:

Logbook Question One: Did you try to relax today?

This sheet solicits information on the children's

use of the relaxation exercises on days when nothing stressful has happened to them or where a child has tried a relaxation exercise for a reason unrelated to anything stressful.

Logbook Question Two: Why did you try to relax?

As a group, different reasons for trying relaxation other than stressful events will be discussed (for example, to get to sleep at night, to practise relaxing, to feel good).

Logbook Question Three: What did you do?

Children will be taught a variety of relaxation exercises over the course of the program and will be encouraged to use those that work best for them.

Logbook Question Four: How did you feel before trying to relax?

Differences in feelings and differences between the cats on the cat scale will be discussed.

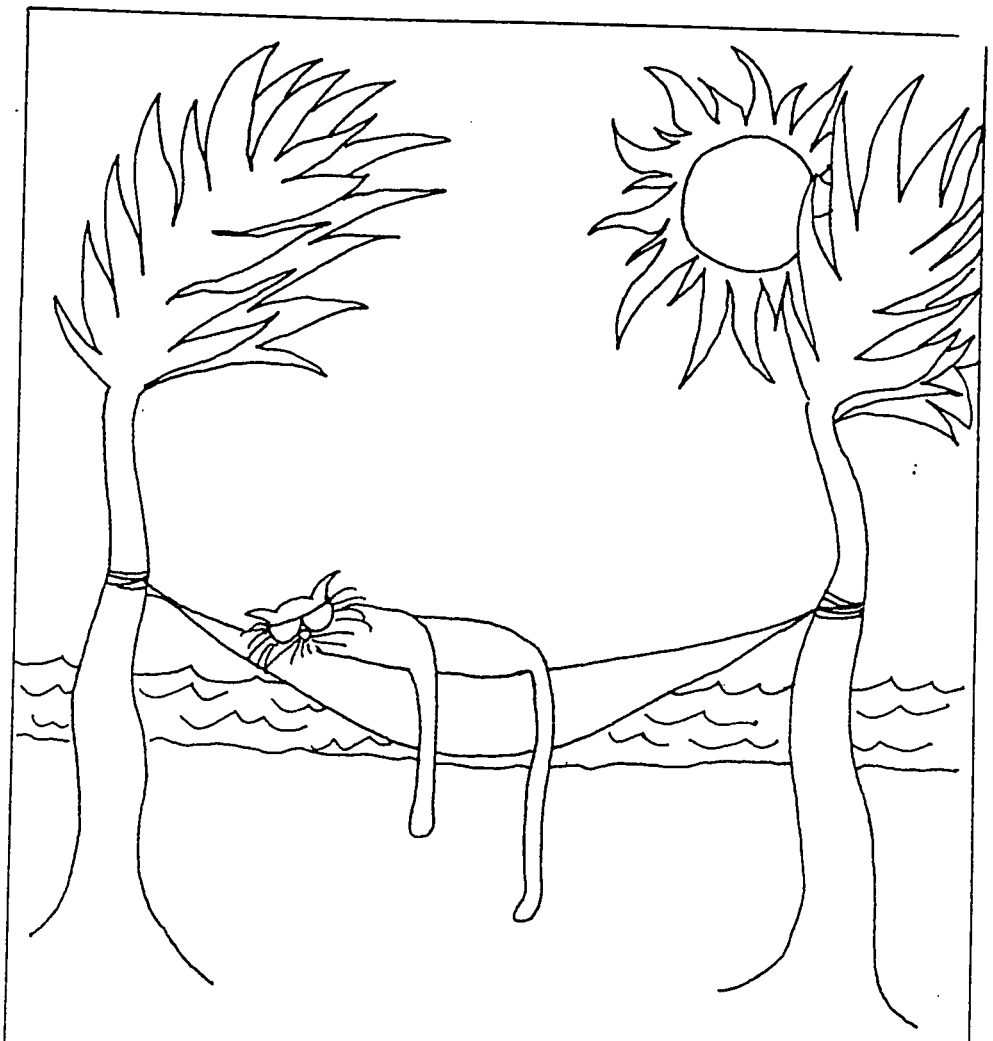
Logbook Question Five: How did you feel after trying to relax?

Differences in feelings and differences between the cats on the cat scale will be discussed.

WHITE LOGBOOK SHEET: This third page is included for

children to use as they wish. They may include how they felt when stressful situations came up, how they tried to cope, how they felt about the relaxation activity they chose to do, or reminders on anything helpful or useful for them. This page may be used similar to a journal to jot down daily things they did well, things that worked for them, things that might work for them, lessons and positive reminders.

NOTE: This logbook will normally be used with children in grades three and up. Logbooks will be filled out as a group with the relaxation instructor every Thursday. Children will keep their logbooks at their desks. To gain the full benefits from this eight week program, it would be of great help if teachers could give children about five minutes daily to fill in their logbooks. The logbooks are a valuable self monitoring tool and serve as an important reminder to implement stress control strategies on a daily basis.



This relaxation logbook belongs to:

_____

Date: _____

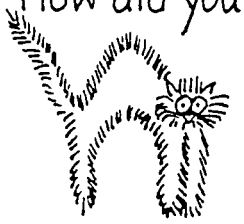
Did anything stressful happen?

Yes

No → Go to the yellow sheet

What happened?

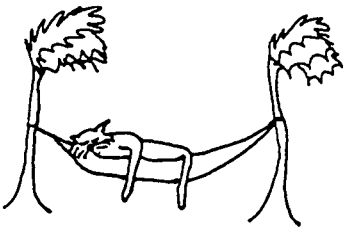
How did you feel when this happened?



Very stressed

A little stressed

A little relaxed



Very relaxed

Did you do anything to feel less stressed?

Yes

No

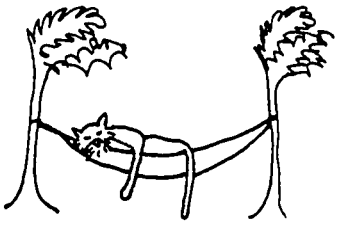
What did you do?

How did you feel after you did this?

Very stressed

A little stressed

A little relaxed



Very relaxed

♡Heart rate
before relaxation _____

♡Heart rate
after relaxation _____

Date: _____

Did you try to relax today?

Yes

No

Why did you try to relax?

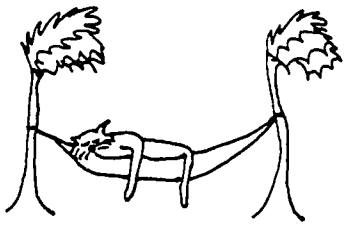
What did you do?

How did you feel <u>before</u> trying to relax?

Very stressed

A little stressed

A little relaxed



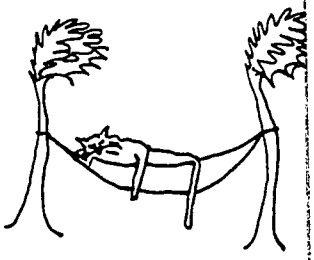
Very relaxed

How did you feel <u>after</u> relaxing?

Very stressed

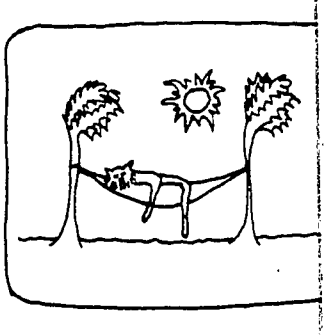
A little stressed

A little relaxed



Very relaxed

Date: _____



KITE SCALE

Rating of Relaxation Activities

Please rate the following activities on the scale of one to ten. If you hated the activity, circle one, if you loved the activity, circle ten. If you felt somewhere in between about the activity, circle the number which best represents how you felt.

	hated it									loved it
1. Spaghetti toes	1	2	3	4	5	6	7	8	9	10
2. Jelly Belly	1	2	3	4	5	6	7	8	9	10
3. Echo Lake	1	2	3	4	5	6	7	8	9	10
4. Quiet Lake	1	2	3	4	5	6	7	8	9	10
5. Butterfly	1	2	3	4	5	6	7	8	9	10
6. Floating on Clouds	1	2	3	4	5	6	7	8	9	10
7. Soaring	1	2	3	4	5	6	7	8	9	10
8. Standing Relaxation	1	2	3	4	5	6	7	8	9	10
9. Special Place	1	2	3	4	5	6	7	8	9	10
10. Flowing Stream	1	2	3	4	5	6	7	8	9	10
11. Magic Wands & Rainbows	1	2	3	4	5	6	7	8	9	10
12. Relaxed Breathing	1	2	3	4	5	6	7	8	9	10
13. Muscle Relaxation	1	2	3	4	5	6	7	8	9	10
14. Follow Your Breathing	1	2	3	4	5	6	7	8	9	10
15. One Breath Relaxation	1	2	3	4	5	6	7	8	9	10
16. Star Trek	1	2	3	4	5	6	7	8	9	10
17. Sea of Tranquility	1	2	3	4	5	6	7	8	9	10
18. Tree It	1	2	3	4	5	6	7	8	9	10
19. Changing Channels	1	2	3	4	5	6	7	8	9	10
20. Reminders of Feeling Good	1	2	3	4	5	6	7	8	9	10

Appendix C

Example of pre test and post test sheets for recording of heart rates, (Cox, 1993).

Post Test #2

Name: _____

Topic: Relax the best way you know how

HR BEFORE: _____

HR AFTER: _____

Appendix D

Grade 3 Experimental Group Responses to Feelings About Stress

Within the children's relaxation logbooks, they described their feelings about stress, what stress meant to them and what their body feels like when they are stressed or worried. These student responses to feelings about stress follow:

When asked what "stress" meant to them, students responded with the following descriptors: tense, worried, angry, sad, mad, annoyed, upset, hurt, frustrated, up tight, tired, scared, muscles tight, bored, uncomfortable, not relaxed, bad feeling in your stomach, something bad happens, heart beats fast, in a hurry and your teacher is mad.

When asked what their body feels like when they are stressed or worried, students said: tense, stiff, tight, worried, mad, angry, sad, upset, scared, frightened, sick, bad, hurt, cold, weird, lazy, strange, not so good, bored, tired, feel as if I am not special, shaky, legs shiver, as if a volcano is going to blow, about to burst, muscles very tense, stomach

feels bad, stomach hurts, full of energy and heart beats fast.

Appendix E

Grade 3 Children

Special Place Relaxation

Personal Experiences. Within their relaxation logbooks, children described their own personal experiences of some of the relaxation activities. Although not directly related to goals of this study, it is interesting to note how the children relate to the activities on their own. Following is a list of the grade 3 experimental group's individual descriptions of their imaginary special place for relaxation:

- I was swimming in the ocean and I went in a whale's mouth and swam around.
- Disney world - splash mountain.
- Candy house - a lot of whipped cream in it.
- Hawaii.
- Tiny Tunes.
- Horse back riding.
- Went to a new planet called B611.
- Near a creek, it is nice and warm and I dance around and giggle with my friend. My little kitten will not grow and she is very small. The sound of the water is relaxing and peaceful. I would lay down and watch the clouds float by and it is very relaxing.
- I went to a colourful land and I flew over top of it and finally I landed on the ground and I talked to the little river and I ate a bowl of ice cream and I had fun!
- I sleep in a hammock. A bird named Tweety was singing to me, there were 2 trees, a cat, a crocodile and a lake.

- I went to wood and tree land.
- My special place has lots of trees with lots of apples and oranges and bananas and lots of other fruits and it had all the different kinds of flowers and it was really beautiful.
- My special place was up in the air. There was a big bouncy thing that went with me wherever I went and I'd just float down to it and bounce right back up again.
- I went to the beach. It was sunny and warm and I was playing in the water and feeding the seagulls. It was fun!
- I went to a nice place where there were waterfalls made of chocolate and pigs that could fly, and everything was made out of sugar. I ate some grass and it was very sweet. Trees grew lolly pops. Same person, 2nd special place: There were lots of cute animals and everything was made out of candy, like the trees, the grass, the bushes and there was a chocolate waterfall. Everything was delicious! And it felt very relaxing. Then I got a ride on a nice bird, and we went up to the clouds. The clouds were made out of cotton candy. They were good. Then I went home.
- I went to the ocean and I had a pet whale shark and I went into his mouth. It was fun.
- My special place was a nice forest.
- It is close to a pond where ducks play in the water and chipmunks are not scared of you.
- Planet IX 1000.
- I went to a candy house. I tasted it and felt it. Some of it tasted bad but most of it was very tasty. It was mostly all chocolate. Yum yum.

Appendix F

Post Program Interview Protocol for Students in Program

(Cox and Orlick, 1993)

1. How did you feel about the relaxation program? Did you like it/not like it? Why?

2. Do you think the relaxation program helped you in any way? If yes, how has it helped you?

3. Did you learn anything from the relaxation program? If so, what did you learn?

4. a. Have you tried any of the relaxation activities on your own? If yes, where?

   b. If yes, in what situations do you use the relaxation activities on your own?

5. Have you told or taught anyone who was not in the program about the relaxation activities? If yes, who did you tell or teach?

6. Do you think you will continue to use the relaxation activities on your own? If yes, when and where?

Appendix G

Post Program Questionnaire for Parents of Children in Experimental Group (Cox and Orlick, 1993)

1. Did your child mention the relaxation program to you at home?

2. If yes, what did your child tell you about the program?

3. Did your child show you or teach you any of the activities? If yes, what did he/she show you?

4. Do you think your child enjoyed the program? Why or why not?

5. Do you think the program was useful for your child? Why or why not?

6. Have you noticed any differences in attitude or behaviour since the program started, negative or positive?

7. Please comment on anything else related to the program.

Appendix H

Post Program Questionnaire for Teachers of Children in Experimental Group

(Cox and Orlick, 1993)

1. In general, what did you think of the relaxation program?

2. Have you noticed any carryover from the relaxation program at the school?

3. Has the program helped the children in any way?

4. Have you tried using relaxation or any of the techniques (e.g. changing channels, treeing it, imagery) with your class as a whole, with individual children, or for yourself?

5. Please comment on anything else related to the program. (e.g. Things you liked, disliked, used, or suggestions for future programs.)

Appendix I

Class Discussions

Responses from Grade 3 Experimental Class

Throughout the intervention program, during class discussions children were asked to share stressful events they experienced and how they coped with such events. Following is a list of stressful events and coping strategies that the children shared.

Stressful Event	Coping Strategy
broke finger	no strategy
hurt tailbone	no strategy
mom had a party, had to stay upstairs	went to room and read book
sister came into my room and broke my hockey game	lay in bed, jelly belly
cousin's dog is as big as a bear and jumps on me and frightens me	ran away
got really sick	no strategy
wanted to be with friend but couldn't	played with stuffed animal
green pea in the margarine	
dad teasing me	tease him back
sick	special place
writing a book report	special place
cut myself	jelly belly
to get to sleep	special place
my best friend turned into an ex-friend	special place
sick	jelly belly
stiff neck	jelly belly
went to the doctor's office	jelly belly
tried to sleep and there were noises	jelly belly
stressed out	muscle relaxation
picked myself with a needle	floating on clouds

Stressful Event	Coping Strategy
practice	special place
sister took my toy	special place
to help my sister fall asleep	special place
practice	standing relaxation
practice	one breath relaxation
practice	special place
practice	one breath relaxation
two of my friends are not getting along	special place
to try to get to sleep	muscle relaxation
my brother was bugging me	special place
before I went down a big hill when downhill skiing	muscle relaxation
angry at someone	muscle relaxation
nervous before a performance	muscle relaxation

Appendix J

Case Studies. In the following case studies, student responses are presented for three phases of the intervention program: early, mid and late. Early program refers to 1-3 weeks into the program, mid program refers to 4-6 weeks into the program and late program refers to 7-10 weeks into the program.

From the logbook analysis, two different groups of children emerged. The first group included children who began the program with no effective stress control strategies. Initially when these children experienced a stressful situation, they reported that they did nothing to try to feel less stressed, or that they tried something but it was ineffective in helping them reduce their stress. Consequently, these children continued to feel stressed when faced with stressful events. As the intervention program proceeded, these children began to effectively apply stress control strategies taught in the intervention program and reported feeling less stressed as a result.

The second group of children began applying stress control strategies taught in the intervention

immediately.

It is interesting to note that some children began to apply the various strategies to their own lives as soon as they learned them, while others took 3 to 6 weeks to begin to use them in real situations.

By the end of the program however, both groups reported using the strategies effectively in most stressful situations they faced.

Students Who Moved from Not Using Any of the Relaxation/Stress Control Strategies Taught in Class in the Early Program, to Incorporating the Strategies Taught in Class Later in the Program

Case #1 (Grade 3 girl)

Early program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got sick and could not go to a party.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I went to sleep.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I broke my finger.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did not do anything.

Q.b2) How did you feel after doing this?

A.b2) Felt very stressed (relaxation rating = 1).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My mouth hurts.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I read a book.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Mid Program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got stuck.

Q.a2) How did you feel when this happened?

A.a2) In between (relaxation rating = 3).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Jelly belly.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My mother yelled.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Spaghetti toes.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I could not sleep.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got cut.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got in a fight.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Floating on clouds.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Late program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My sister was bugging me.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If

so, what did you do?

A.b1) I went to my special place.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I could not go home for lunch.

Q.a2) How did you feel when this happened?

A.a2) Felt in between (relaxation rating = 3).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I thought of all of the good things about eating lunch at school.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My sister pulled my fly's wings off.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got in trouble.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got pricked by a pine needle.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Floating on clouds.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My turtle's shell got cut.

Q.a2) How did you feel when this happened?

A.a2) In between (relaxation rating = 3).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Flowing stream.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My sister was loud.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place, it is my favourite.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got cut.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Floating on clouds.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I had to meet a new baby sitter.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did soaring.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My turtle died.

Q.a2) How did you feel when this happened?

A.a2) Very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did butterfly.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Case #2 (Grade 3 boy)

Early program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I was mad and tired.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did not do anything.

Q.b2) How did you feel after doing this?

A.b2) No response.

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I was playing baseball and I got grass stains.

Q.a2) How did you feel when this happened?

A.a2) No response.

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) No response.

Q.b2) How did you feel after doing this?

A.b2) No response.

Mid program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got a bad nightmare that was scary.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Jelly belly.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Late program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My mom and her friends were downstairs and I could hear them.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Special place.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Students Who Incorporated Relaxation/Stress Control Strategies Immediately After Being Taught

Case #3 (Grade 3 boy)

Early program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I did not finish my homework.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I took deep breaths.

Q.b2) How did you feel after doing this?

A.b2) Felt in between (relaxation rating = 3).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My brother stole my candy.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I took deep breaths.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Mid program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My mom had a party and I had to stay upstairs.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I went to my room and read a book.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I did not finish my homework.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If

so, what did you do?

A.b1) I did one breath relaxation.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Late program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I fell and cut my leg.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I went to my own special place.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I had to finish my homework and I was tired.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did flowing stream.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got a new bike and I had to wait for my dad to put it together.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I went to my room and played game boy.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Case #4 (Grade 3 girl)

Early program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I was up late at a sleep over and I had to get up early to go skiing and I had to be in a good mood because I went out for supper.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I sat for 5 minutes doing jelly belly.

Q.b2) How did you feel after doing this?

A.b2) Felt a little stressed (relaxation rating = 2).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I did not get enough sleep.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I tried to kill a pillow.

Q.b2) How did you feel after doing this?

A.b2) Felt a very stressed (relaxation rating = 1). (it didn't help)

Late program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) Today is my ballet exam.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) One breath relaxation.

Q.b2) How did you feel after doing this?

A.b2) Felt a little stressed (relaxation rating = 2).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I couldn't sleep and when I tried to do relaxation my brother jumped on me.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) same as A.a1).

Q.b2) How did you feel after doing this?

A.b2) Felt very stressed (relaxation rating = 1).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I was at ballet for 4 hours.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) One breath relaxation.

Q.b2) How did you feel after doing this?

A.b2) Felt a little stressed (relaxation rating = 2).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I slept with my dad and he fell asleep and started snoring.

Q.a2) How did you feel when this happened?

A.a2) Felt in between (relaxation rating = 3) and mad.

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Floating on clouds.

Q.b2) How did you feel after doing this?

A.b2) I don't know because I fell asleep.

Case #5 (Grade 3 girl)

Early program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I did not feel good.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I took a nap.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I had to do my book report.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did special place.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My best friend does not like me any more.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did special place.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Mid program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) My guide leader came over.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did special place.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Late program

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I just finished watching a scary movie and it is time to go to bed but I am too scared.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Jelly belly.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I was sick.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) I did special place.

Q.b2) How did you feel after doing this?

A.b2) Felt very relaxed (relaxation rating = 5).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I got a splinter in my thumb.

Q.a2) How did you feel when this happened?

A.a2) Felt a little stressed (relaxation rating = 2).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) Floating on clouds.

Q.b2) How did you feel after doing this?

A.b2) Felt a little relaxed (relaxation rating = 4).

Q.a1) Did anything stressful happen? If so, what happened?

A.a1) I went to the doctor and they pricked my finger to test my iron.

Q.a2) How did you feel when this happened?

A.a2) Felt very stressed (relaxation rating = 1).

Q.b1) Did you do anything to feel less stressed? If so, what did you do?

A.b1) One breath relaxation.

Q.b2) How did you feel after doing this?

A.b2) I don't know.

Whether the students began implementing the relaxation/stress control strategies immediately after being taught, or whether they began using them later on in the program, all of the students in the intervention program reported using the strategies effectively and in relation to this, felt less stressed.

Appendix K

Grade Three Children

List of Positive Ways to Deal With Stress

Within their logbooks, the children made up a list of positive ways to deal with stress.

NOTE: The children listed all of the relaxation activities and stress control strategies taught in the intervention program, as well as the following:

- Time-out away from stressor (go to room)
- Breathe easily
- Hug a stuffed animal
- Sleep
- Punch a pillow
- Read
- Think about something else
- Watch t.v.
- Take a walk
- Go to a friend's house
- Pet your pet

Following are further examples of positive ways to deal with stress:

> "I can stop myself from crying by doing a relaxation activity"
> "when I have nightmares I can hug my stuffed animals and squeeze my nightmares out"
> "when I am really mad at someone I can do relaxation activities and calm myself down"

APPENDIX L

Pre/Post Test Procedure

An explanation was given to the class on how to use the monitors and when and where to record their partners heart rates (see Appendix C for example of pre/post heart rate sheet). With kindergarten and grade 1, the researchers did the recording of the heart rates. With grades 2-6, children worked in partners. One partner relaxed while the other recorded his/her partner's heart rate, before and after the one minute of relaxation, on designated sheets. Heart rate monitors remained flat on the desk, face up, for a clear view of the numbers. The researcher raised her hand when one minute had commenced and raised her hand again at the end of one minute. This ensured that she did not influence the children's heart rates. The recording children watched her hand and then recorded the heart rate reading on the sheet.

APPENDIX M

Pre- and Post-test Means for Heart Rate Before and After Relaxation for Experimental and Control Groups for Grades K-6 for Tests 1 and 2

Table 3.
Pre- and Post-test Means for Heart Rate Before and After Relaxation for Experimental and Control Groups for Grades K-6 for Test #1 (i.e. "relax").

Grade	Group	Pretest HRBefore	HRAfter	Posttest HRBefore	HRAfter
Kinder	Exp	86.3	91.2	94.9	83.9
	Cont	91.1	90.1	98.6	95.9
Grade 1	Exp	102.3	100.5	100.3	87.7
	Cont	100	98.8	96.8	99.2
Grade 2	Exp	92.8	89.6	88.2	83.2
	Cont	92.6	90.8	81.8	88.8
Grade 3	Exp	79.3	79.3	89.3	81.0
	Cont	87.7	87.7	93.3	93.3
Grade 4	Exp	86.5	89.0	90.4	88.7
	Cont	90.0	91.3	91.4	90.3
Grade 5	Exp	83.7	84.7	96.9	86.9
	Cont	90.5	89.6	107.6	105.6
Grade 6	Exp	82.2	81.4	86.5	82.9
	Cont	79.0	78.2	90.0	88.8

Table 4.
Pre- and Post-test Means for Heart Rate Before and After Relaxation for Experimental and Control Groups for Grades K-6 for Test #2 (i.e. "relax the best way you know how").

Grade	Group	Pretest HRBefore	HRAfter	Posttest HRBefore	HRAfter
Kinder	Exp	97.1	95.2	98.5	90.1
	Cont	90.5	90.9	92.7	98.7
Grade 1	Exp	103.3	98.9	99.9	89.5
	Cont	103.4	104.0	103.8	107.3
Grade 2	Exp	90.5	93.0	83.7	82.6
	Cont	92.3	93.0	93.1	87.9
Grade 3	Exp	81.7	82.0	91.7	79.9
	Cont	91.7	85.0	95.9	95.5
Grade 4	Exp	87.4	84.3	90.3	83.4
	Cont	91.4	90.0	90.7	88.2
Grade 5	Exp	86.5	83.7	95.2	85.8
	Cont	92.0	89.8	106.1	103.3
Grade 6	Exp	79.2	83.4	88.9	83.9
	Cont	80.4	80.1	91.0	89.5