Teaching Coping Strategies to Adolescents with Migraine

Maureen A. Lascelles, BA, S. June Cunningham, MA, Patrick McGrath, PhD, and Michael J.L. Sullivan, PhD
Department of Psychology, Children's Hospital of Eastern Ontario, Ottawa, Ontario and Department of Psychology (M.J.L.S.), The Rehabilitation Centre, Ottawa, Ontario

Abstract
A treatment program was developed involving cognitive and behavioral strategies for the treatment of migraine headaches with adolescents at the Children's Hospital of Eastern Ontario. These techniques include: a headache diary, progressive relaxation techniques, cognitive restructuring, distraction or attention focusing, mental activities, thought stopping, imagery, behavior rehearsal, assertiveness and problem solving. The article details the therapeutic use of these techniques. An analysis of each strategy is presented in three sections: a rationale to the adolescent, recommendations to the therapist and a troubleshooting section. J Pain Symptom Manage 1989;4:135–144.

Key Words
Adolescent, coping strategies, migraine, therapist

Introduction
Migraine headache is a common problem among adolescents with conservative prevalence rates ranging upward from 3.9% for teenage boys and 6.2% for teenage girls. Medical treatments include palliative medication, prophylactic medication, and psychological interventions involving various forms of biofeedback, relaxation, and stress management. While clinical reports suggest that the early use of palliative medication may be effective in reducing the severity and duration of adolescent migraine, these reports have not been substantiated in clinical trials. Beta blockers that are effective with adults may not be effective with children. Research on prophylactic medication has been impeded by subject recruitment difficulties caused by the reluctance of parents and adolescents to take daily medication.

Psychological treatments have been shown to be effective for the management of migraine headaches in adolescents. These treatments have included various cognitive and behavioral strategies focusing on stress reduction, including self-hypnosis, biofeedback, relaxation, and problem solving. These stress reduction techniques may be administered alone or in combination. Significant reductions in headache severity and frequency have been obtained within 8 wk and have been maintained at 1 yr follow up. The purpose of this article is to describe the clinical application of a psychologically based treatment for adolescents with common migraine. For our program, we have chosen to work with the stress model, in which we operate on the assumption that migraine is an inherited predisposition, which is triggered by either psychological or physiological stress.
Although the actual evidence for this model of migraine is relatively weak, the efficacy of treatment and the validity of the model are independent, and we find that it provides a useful framework for effective treatment delivery. Oleson and Edvinsson provide an excellent discussion of the mechanisms underlying migraine.

**Description of the Program**

Adolescents participating in the program must be screened by a neurologist or a physician experienced in the diagnosis of adolescent migraine. Adolescents with migraines related to dietary, menstrual, or pathological causes are not included in the program. The program is designed for the treatment of common migraine.

The treatment program involves teaching adolescents various cognitive and behavioral strategies aimed at minimizing and managing stress. The treatment program consists of 10 stress reduction strategies, which are taught over 8 weekly sessions. Adolescents are instructed to practice the strategies learned in a particular session over the next week. At the end of the program, the adolescent can choose the strategies that work best. We have chosen to teach all strategies to each adolescent because we don't have an adequate method to assess the skills that they have before beginning treatment. Also, until the adolescent is thoroughly familiar with a strategy, it is not possible to make an assessment of whether or not to use the strategy. According to Lazarus, coping consists of various cognitive and behavioral strategies that may change over time as a function of environmental stressors.

Throughout treatment, patients are required to monitor headache frequency, duration, and severity, in order to provide them with feedback about the relative efficacy of the program. The treatment is similar to that used by Richter et al. Copies of our patient manual and professional handbook are available.

The therapist for the program can be a psychologist, psychometrist, physician, nurse, school counselor, social worker, or other health professional. During the initial interview, the therapist communicates the importance of a commitment to the program. The adolescent then has the opportunity to decide if he or she would like to participate in the program. The teenager is responsible for practicing the strategies and completing homework assignments.

The program begins with an explanation of the treatment rationale. Adolescents are told that migraine is an inherited condition. However, it is generally believed that migraines are precipitated by psychological stress or physiologic factors such as diet, exercise, weather changes, and other external components. Thus, by learning various ways of managing stress and avoiding triggers, the adolescents can effectively reduce the severity, duration, and frequency of their headaches.

A major part of the treatment focuses on cognitive means of reducing stress. Adolescents in the program are taught several strategies. These include cognitive restructuring and reappraisal, distraction and thought stopping, and avoiding negativistic or catastrophizing cognitions. The cognitive strategies and problem-solving strategies have been adapted from current stress reduction programs and cognitive therapy techniques. The relaxation strategies have been adapted from Bernstein and Borkovec, Benson, Cautela and Groden, and Stroebel.

The treatment program is structured in the following fashion:

1st session—rationale, headache diary, coping exercise and relaxation exercise.
2nd session—thinking straight.
3rd session—discussion of unrealistic beliefs, relaxation without tension.
4th session—thought stopping and attention focusing.
5th session—imagery, behavior rehearsal, and mental activities.
6th session—assertiveness and mini-relaxations.
7th session—problem solving and a smile and a twinkle.
8th session—summary of coping strategies, planning to deal with future headaches.

**Coping Exercises**

The coping exercises are used to practice dealing with stressful situations by using coping strategies learned in the program. See Figure 1 for an example of the coping exercises. Under the Stressful Situation heading, the adolescent
records a frustrating or difficult situation that happened that day. In the next column, negative thoughts are recorded about the situation. Tension level is then assessed on a continuum between 0 and 10, 0 being the least amount of tension possible and 10 being the most. Under the Coping Strategies heading, the adolescent writes in how the situation was handled to feel less tense. The tension level is again rated at this time. The last column, Praising Myself, is for the adolescent to congratulate herself for handling the situation.

These exercises can be helpful for the adolescent to get an objective view on problematic issues. Another advantage to the exercises is that they allow the therapist to understand issues that concern the adolescent. Situations recorded in the coping exercises can be further discussed if the adolescent is having difficulty handling them.

**Analysis of Coping Strategies**

Both cognitive and behavioral strategies are taught as a package so that the adolescent can choose from a variety of techniques. An analysis of each strategy is done to help the therapist teach the technique. This includes a rationale to the adolescent, recommendations to the therapist, and a troubleshooting section. The strategies include the headache diary validated by Richardson et al., progressive relaxation techniques, mini-relaxation, cognitive restructuring or thinking straight, distraction or attention focusing, mental activities, thought stopping, imagery, assertiveness, and problem solving.

<table>
<thead>
<tr>
<th>DAY</th>
<th>STRESSFUL SITUATION that happened to me</th>
<th>NEGATIVE THOUGHTS that make it worse</th>
<th>TENSION LEVEL 0..........10</th>
<th>COPING STRATEGIES Thinking Straight, positive thoughts that make me feel better</th>
<th>PRAISING MYSELF a pat on my back</th>
<th>TENSION LEVEL 0..........10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping for new jeans - can't find the ones I want for the party tonight.</td>
<td>This is awful! Why can't I find the jeans I want? I'll feel dumb in my old jeans.</td>
<td>5</td>
<td>I don't need new jeans to have fun at the party. I won't let this disappointment get me!</td>
<td>Hey— I tried it. I'm coping! Good for me!</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**COPING EXERCISES**

![Fig. 1. Coping exercises.](image)

**1. Headache Diary**

**Rationale to the Adolescent**

The headache diary is used by you and the therapist to keep track of the headaches. You write the intensity of your headaches four times a day in your diary, throughout the program. The ratings are done at breakfast, lunch,
It is important to rate your headaches at these times rather than trying to remember them later, since these ratings will probably not be accurate. The intensity ratings range from 0 to 5, 0 being no headache to 5 being the worse headache possible. The headache diary is useful for both you and the therapist to notice changes, usually improvements, in headache activity throughout the program. The headache diary is also useful for monitoring triggers for headaches. Once you know what causes them, you can avoid those triggers or learn to deal with those situations using stress coping strategies.

**Recommendation to the Therapist for Explaining the Headache Diary**

1. Use a sample diary to explain instructions.
2. Ask the adolescent to explain what her headaches feel like—make sure she is scoring the proper intensity.

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**Troubleshooting**

**Problem**

"I'll forget to fill in the diary."

"I'll lose the diary."

"I stay at school for lunch and go out lots in the evening."

**Suggestion**

"Tape it up where you will see it, write notes to yourself, ask other family members to remind you. You need to complete the diaries to stay in the program. You need to work at the program in order for it to help you."

"Tape it somewhere. Don't carry it around with you."

"Put a piece of paper in your lunch bag or wallet or some other place so that you will see it. Write down your headache rating on a piece of paper and transfer it to your Headache Diary when you get home."

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**2. Progressive Relaxation**

**Rationale to the Adolescent**

Relaxation helps to control tension by relaxing the body. If the body is relaxed, there is less of a chance of headache activity. There are three variations of this technique. One is to tense and then relax each set of muscles in turn. A second alternative is to relax all of the muscles without tensing them. A third variation is to imagine a calm, peaceful, and relaxing scene such as lying on a beach. This is an exercise that can be done even when stress and tension are not obvious. Relaxation is enjoyable for most people to do.

**Recommendations for the Therapist for Teaching Progressive Relaxation**

1. Use a quiet room where there will not be any distractions.
2. Make a tape of the relaxation exercise so that the adolescent can practice at home. The tape is most effective when it is made by the therapist.13
3. Make the environment relaxing by turning down lights and seating the person in a comfortable chair. Most adolescents are more comfortable sitting for this exercise. Adolescents can be self-conscious about lying down in the office setting. It can be suggested that they use their bed at home.
4. Warn the adolescents not to tense so much that it causes pain. Check to see if they have any neck or back injuries. If so, caution them to be gentle when tensing the muscles in these areas, or they can use the relaxation with imagery.
5. Go through all of the muscle groups for the first and second variations of the relaxation exercise. For the third, simply describe a relaxing scene.

**Troubleshooting**

**Problem**

"But I'm not tense so why should I do a relaxation exercise? I'm already relaxed."

"I get muscle cramping when I do the exercises."

"I feel tingling or pins and needles in my hands and feet."

**Suggestion**

"You can't be too relaxed. Once it is done, you will feel more relaxed. It will help you to keep your overall tension level down. You will feel better afterwards and have more energy."

"Don't tense the muscles so tightly during the tension phase of the exercise."

"This is a sign that the muscles are changing and relaxing. It is not really a problem. If it becomes uncomfortable, wriggle your hand or foot in order for it to stop."
"I fall asleep during the tape."

"Keep your attention on the words of the tape. Do it earlier in the day."

"I find it boring, my mind wanders."

"Just let your mind go. Let your thoughts go. Pay attention to how your body feels. Try using the relaxation with imagery, it may be less boring for you."

"The tape does not relax me."

"It often takes time for your muscles to learn to relax. Each bit of practice helps to reduce tension, if only a little. Your muscles are less tense even if you don't feel completely relaxed."

"I keep forgetting to do the relaxation exercise."

"Do the exercise at the same time each day. What time of day would it be least disruptive for you?"

3. Mini-Relaxation

Rationale to Adolescent

Mini-relaxations are helpful in preventing the accumulation of tension throughout the day. Mini-relaxations can reduce headache activity by not allowing tension to get to the critical level. Mini-relaxations are particularly useful during a stressful event or with a headache. With this technique, you take a deep breath and slowly exhale while telling yourself to relax. This is repeated five times. It takes seconds and can be done anywhere at anytime. A variation of the mini-relaxation is called "a smile and a twinkle," where you put a twinkle in your eye, smile to yourself, and think about releasing the excess tension in your face and shoulders as you do a mini-relaxation.

Recommendations to the Therapist for Teaching Mini-Relaxations

1. The easiest way to teach mini-relaxations is to explain then demonstrate.
2. Discuss times during the day when the adolescent could use the mini-relaxation technique.

Troubleshooting

Problem
"I only feel relaxed for a minute or so afterwards."

"Do it again. It will prevent tension build up. You can't do it too often."

"It doesn't work."

"Practice noticing what your body feels like when you take a deep breath. Say R-E-L-A-X to yourself slowly. Notice any small changes in your tension level."

4. Thinking Straight

Rationale to Adolescent

Thinking straight prevents tension build up by feeling good about situations. This lessens headache activity since you are not as tense as often. With this technique you can change negative thoughts to more positive, thinking straight ideas. Emphasis is put on viewing the situation in the best light. When you think straight, you feel more in control of the situation. Thinking straight can help enhance your self-esteem by countering bad feelings about yourself.

Recommendations to the Therapist for Teaching Thinking Straight:

1. Thinking straight should be taught by using examples based on personal situations that upset the teenager or by using typical situations such as being late for school or having too much homework.
2. Practice daily with written coping exercises. This makes the adolescents aware of their thoughts.

Troubleshooting

Problem
"I don't have any negative thoughts."

"Let's talk about a situation where you felt very anxious. (If the teenager can't think of one bring up an example like an exam or an argument with a friend.) What were you thinking at the time?"

"Thinking straight doesn't work."

"If you don't do well on a test you could think, 'I'll have to study really hard for the next test,' rather
"I can't think positively when things go wrong."

"I have trouble remembering to use it when I'm tense."

"Since I started thinking straight I don't have any problems."

Here are 2 examples of Thinking Straight:

Stressful situation: The dentist has just informed you that you have a cavity. He will need to use the drill.

Negative thoughts: I hate the drill. He might hit a nerve. This is going to hurt a lot.

Tension Level: 6

Thinking straight thoughts: This will be over soon. It will only hurt for a few minutes. I can handle it.

Tension Level: 4

Your tension level is higher with the negative thoughts than with the thinking straight thoughts.

or

Stressful situation: Math exam tomorrow morning and I have too much material to study.

Negative thoughts: I know I'm going to fail. I can't learn all of this by tomorrow.

Tension Level: 8

Thinking straight: I'll study hard tonight and practice as many problems as possible. I'll try my best on the exam.

Tension Level: 5

Again, your tension level would be higher with the negative thoughts than with the thinking straight thoughts.

5. Attention Focusing

Rationale to Adolescent

Attention focusing reduces stress, tension, and headache activity by moving your mind away from headaches or concerns over which you have no control. You do this by focusing on things like your plans for the weekend or engaging in tasks that require attention. Your tension level goes down because thoughts are less stressful. This is a simple, quick, and easy technique that is enjoyable to do.

Recommendations to the Therapist for Teaching Attention Focusing

1. Teach by using examples—discuss a stressful situation then begin to talk about something that is not stressful like a weekend outing. Ask the adolescent for the tension level for both situations.

Troubleshooting

Problem

"I have difficulty focusing my attention."

Suggestion

"When you read a good book or watch a good movie you are focusing your attention. This means that you can control your attention."

"That is to be expected. When thoughts break through, refocus your attention."

6. Thought Stopping

Rationale to Adolescent

Thought stopping reduces tension and the possibility of headache activity by getting your mind off a stressful situation or worries that can't be changed. With this technique, you yell "STOP" out loud when you think about the stressful thought. After you've yelled "STOP" several times, yell it to yourself while imagining a big red stop sign.
This technique stops you from dwelling on mild headaches and unpleasant thoughts that bother you. You should not yell “STOP” out loud when you have a bad headache as this will make it worse.

**Recommendations to the Therapist for Teaching Thought Stopping**

1. Practice in the office until the teenager is able to do it alone.
2. Have the teenager yell “STOP” to practice the auditory and visual images.
3. Once thought stopping is finished, attention focusing can be used to focus attention elsewhere.

**Troubleshooting**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Thought stopping doesn’t work for me.”</td>
<td>“Practice stopping a thought out loud. Once you have stopped the thought quickly focus your attention on something else.”</td>
</tr>
<tr>
<td>“The yelling makes my headache worse.”</td>
<td>“Don’t yell out loud when you have a bad headache, just do it in your head.”</td>
</tr>
<tr>
<td>“I feel embarrassed yelling STOP to learn the technique.”</td>
<td>“It is awkward in the beginning. Give it a few tries before giving up. Try yelling to yourself if you can’t yell out loud.”</td>
</tr>
<tr>
<td>“I only get temporary relief of tension. The thought keeps coming back.”</td>
<td>“Focus your attention afterwards or do a relaxation exercise to keep your mind off the thought.”</td>
</tr>
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</table>

**7. Imagery**

**Rationale to Adolescent**

This technique keeps tension under control by imagining something pleasant rather than dwelling on headaches or worries. With this technique, you imagine relaxing or adventuresome scenes where you are the main character. Use all of your senses, imagining what the scene looks like, smells like, tastes like, and feels like. Imagine as many details as possible in order to make the scene more vivid.

**Recommendations to the Therapist for Teaching Imagery**

1. Ask about situations the adolescent finds enjoyable.
2. Compare the imagery technique to running a movie in your head, daydreaming, or remembering an event that has occurred in the past.

**Troubleshooting**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Imagery does not help me.”</td>
<td>“You can trick your body into responding by using your imagination. Try this scene. Close your eyes and imagine a yellow lemon. Feel the bumpy surface. Cut the lemon in half and feel the wet sticky juice run down your fingers. Smell the tangy, sharp smell. Pick up a piece of the lemon and take a bite. Did your mouth water?”</td>
</tr>
<tr>
<td>“I have difficulty imagining scenes when I’m feeling bad.”</td>
<td>“Have an enjoyable scene that you practice often. Think of something you enjoyed in the past. Develop this scene as reliable and easy to do when you need it.”</td>
</tr>
<tr>
<td>“Imagery is great when I don’t feel like listening to my teacher.”</td>
<td>“Don’t use the technique when you are doing other activities. Use it at appropriate times like when you have trouble sleeping, when you are bored or concerned about something that can’t be changed.”</td>
</tr>
</tbody>
</table>

**8. Mental Activities**

**Rationale to Adolescent**

This technique reduces tension and headache activity by keeping you from thinking about stressful thoughts and headaches. It lets you keep your mind busy by playing word games, doing multiplication tables, counting or remem-
bering words to a poem or song. You might count backwards from 100 by threes or memorize a poem or a verse. This is a fast and easy technique that anyone can use.

**Recommendations to the Therapist for Teaching Mental Activities**

1. Use a lot of examples.
2. Suggest arithmetic problems or multiplication tables since they are complicated enough to keep the mind busy.

**Troubleshooting**

**Problem**

"It's boring to do."

"I only get temporary relief of the tension."

**Suggestion**

"Invent a fun mental activity like memorizing a favorite song or poem."

"Once your mind is off the stressful thought or headache do a relaxation exercise, use imagery or find something else to do."

9. **Behavior Rehearsal**

**Rationale to Adolescent**

This technique reduces tension by allowing you to feel more relaxed in a situation that does not happen often by rehearsing it beforehand. You can rehearse both in your mind and by practicing the event. You will feel more confident during the stressful situation since you practiced it several times before the event occurred. With this technique, you rehearse a difficult situation by breaking it down into stages and imagining yourself relaxing at each stage.

**Recommendations to the Therapist for Teaching Behavior Rehearsal**

1. Practice with a situation that the teenager may encounter in the near future. For example: giving a speech, a sports competition, or an exam.
2. Practice a few situations so that the teenager will learn to break down situations into steps.

**Troubleshooting**

**Problem**

"Behavior rehearsal does not make sense."

"It takes too much time and effort to practice."

"I feel self-conscious."

"I can't think of any situations."

**Suggestion**

"Try it with a difficult situation that is coming up in the future. Behavior rehearsal will reduce tension while the event is being anticipated but it will also reduce tension during the event."

"It will help you perform better during the stressful event."

"It might be hard to practice but it will make the stressful event easier for you."

"Think of a time when you felt very nervous. This would be a good time to use behavior rehearsal."

10. **Assertiveness**

**Rationale to Adolescent**

Assertiveness is a method of communication where you show respect for others while your message remains clear and honest. With this technique, you communicate your thoughts and feelings to other people directly without hurting or offending them. There are two negative methods of communication that are often used. Passiveness is when you don't say what you feel and expect others to guess. Aggressiveness is when you say what you feel without showing respect for the other person. Both of these methods lead to increased tension whereas assertiveness leads to decreased tension.

**Recommendations to the Therapist for Teaching Assertiveness**

1. Demonstrate passive, aggressive and assertive styles of communication so that the teenager sees the advantage of the assertive method and disadvantages of the passive and aggressive styles.
2. Pay attention to situations where the teenager may have a disagreement or wish to say "no."
For example, the adolescent may wish to refuse to go out with friends that want to go drinking.

In this situation the assertive response would be: "I don't want to go out this evening."

The passive response would be: "I have too much homework to do—well maybe I will go since every one else is going."

The aggressive response would be: "You guys are really stupid. I'm never going out with you again."

Another situation might be: The school band president asks Susan to help set up the stage for a concert when she has a test the next day.

The assertive response would be: "I am sorry but I can't. I have a major test tomorrow."

The passive response would be: "I really should stay home and study for my chemistry test—well maybe I will come since you don't have enough people."

The aggressive response would be: "Why do you always ask me? I don't have time for that."

Troubleshooting

Problem: "I have trouble being assertive especially in difficult situations."

Solution: "Start by practicing in easier situations. The more you practice, the better you'll get at it. When you become assertive in easy situations, then you can try being assertive in more difficult situations."

Problem: "I get very angry when something really bugs me."

Solution: "It's O.K. to feel angry but if you communicate aggressively the outcome will be negative."

An example of a situation where someone is angry:

Two adolescents share the same locker at school. One leaves all of his books in the locker and uses up 90% of the space.

The aggressive response would be: "Can't you see that there isn't enough space in here for all of your books. Get them out of there."

The assertive response would be: "We have to share this locker and it is rather small. Please don't leave all of your textbooks in here because there is not enough room for my books."

In the first situation you will almost certainly have an enemy, but when you communicate assertively you will more than likely continue to get along with your locker mate.

11. Problem Solving

Rationale to Adolescent

This technique helps reduce tension by eliminating tension caused by problematic situations. With this technique, you write out a problem that has been causing tension, then write out as many solutions to the problem as possible. Afterward you evaluate each solution, and from these outcomes you choose an appropriate solution. This technique is helpful because it forces you to identify a problem. It also gives you an objective view of the problem so that you can generate different solutions.

Recommendations to the Therapist for Teaching Problem Solving

1. Teach this by giving the adolescents problems to solve on paper.
2. Emphasize that more solutions will be found by writing the problem out.
3. Work through one or more sample problems.
4. When discussing solutions, suggest silly ones since this will open the adolescent's mind to more ideas.

Troubleshooting

Problem: "Problem solving did not work for me."

Solution: "What was the problem? What solutions and outcomes did you come up with? What solution did you choose? Make sure you write the problem out."

Problem: "It's too time consuming to think and write all of it out."

Solution: "Afterwards your problem will be solved and you can use your energy for other activities."
“It’s too difficult for me to recognize problems.”

“I like using the crazy solutions that I think up when I brainstorm.”

**Summary**

To date, research has demonstrated the efficacy of a variety of cognitive and behavioral techniques in the treatment of pain conditions. However, research reports of psychological treatments do not, of necessity, include the clinical details that are needed to successfully implement treatment and maintain patient involvement. By detailing the rationale for each strategy, outlining specific recommendations, and describing troubleshooting for common problems, we hope to make these strategies more available for use by a wide range of therapists.

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