Using Stress Management to Promote Critical Thinking

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USING STRESS MANAGEMENT TO PROMOTE CRITICAL THINKING

A Thesis Presented
by
ROBERT L. SCHOENBERG

Submitted to the Office of Graduate Studies and Research of the University of Massachusetts at Boston in partial fulfillment of the requirements for the degree of

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I dedicate this thesis in memory of Anne Cohen.
ABSTRACT

USING STRESS MANAGEMENT TO PROMOTE CRITICAL THINKING

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This paper examines the effects of distress upon critical thinking and offers a variety of stress management techniques to enhance critical thinking skills. A major theme throughout this paper is that one cannot think clearly when one is distressed. The harmful effects of distress upon critical thinking are discussed in the context of the works of several authors in the field of stress management and cognitive psychology. Several different types of stress reduction techniques are presented and discussed.

The critical thinking skills of metacognition, frame of reference and methodological believing are reviewed with a focus on how stress management can enhance these skills. Teaching strategies incorporating these critical thinking skills, with specific examples, are offered for high school teachers.

A theoretical discussion addresses the topics of stress and distress, the need for stress management, stress strategies. Following this discussion, stress management techniques and critical thinking skills are integrated.
This paper culminates with the presentation of four workshops designed to enhance critical thinking through the use of stress management. Each workshop is designed for high school teachers and consists of theory, practical applications and several hands-on activities and exercises. Although these workshops are aimed for teachers helping students to think more critically, the teachers may find that these techniques impact on their own thinking.

In conclusion, this paper demonstrates that stress management plays an integral role in promoting critical thinking and offers the reader several strategies to accomplish this goal. The theoretical discussions of both stress management and critical thinking set the stage for practical applications.
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This paper examines the effects of distress upon critical thinking and offers a variety of stress management techniques to enhance critical thinking skills. Various definitions of stress are provided and a clarification is offered between the terms and stress distress. The harmful effects of distress upon critical thinking are discussed, in the context of the works of several authors in the field of stress management and cognitive psychology. Several critical thinking skills are reviewed with a focus on how stress reduction could enhance these skills.

The techniques of stress reduction and the skills of critical thinking are integrated through a series of workshops demonstrating how stress management can be used to enhance critical thinking. While the workshops are geared for high school teachers, primary teachers and professionals from other fields may find the workshop material useful.

As a trainer who has conducted a variety of stress management programs for over 13 years, I am always seeking new ways to apply and expand stress management. Thinking through the relationship between stress and critical thinking has provided me with new insights. My major theme throughout this thesis is that one cannot think clearly when one is distressed. Certainly, if one cannot think clearly when distressed, then one cannot think critically, either. Therefore, this paper demonstrates how stress management can be used to enhance critical thinking.
Overview of Chapters

In Chapter I the term stress is defined through three different models: 1) the response model, 2) the stimulus model and 3) the interactional model. A working definition of stress is developed and a distinction is made between stress and distress. The effects of distress upon human behavior are examined and two scenarios are offered to demonstrate the negative effects of distress upon human behavior. The chapter concludes with a brief discussion of cognitive rigidity and flexibility.

Chapter II, which addresses the need for stress management, begins by defining the problem that stress presents towards thinking and behavior and how stress affects cognitive processes. The specific effects of distress upon critical thinking are explored. This chapter also demonstrates how critical thinking itself can be distressing. The ways in which distress promotes egocentric thinking and impairs methodological believing are also discussed. The chapter concludes that it is necessary to combat the negative effects of distress with a variety of stress management techniques.

Chapter III presents four categories of stress management techniques: 1) self esteem techniques, 2) changing emotional states, 3) managing of feelings and 4) relaxation. Each technique is presented with a description of the procedure for implementation along with a rationale for utilization. Although this paper is aimed at high school
teachers helping their students to utilize these techniques, the teachers themselves may benefit from these activities.

Chapter IV discusses specific teaching strategies for high school teachers. The critical thinking skills discussed include metacognition, methodological believing and frame of reference. This chapter integrates critical thinking theory with practical applications at the secondary level.

Chapter V integrates stress management with critical thinking skills and demonstrates how stress management plays an important role towards enhancing those skills. This chapter consists of three sections: 1) Beck and Metacognition, 2) Meichenbaum and Metacognition, and 3) Co-counseling and Problem Solving. The first section demonstrates how Beck's work (Beck et al. 1979) in cognitive psychology is nearly identical to metacognition. The second section demonstrates how Meichenbaum's techniques also promote metacognition. The third section discusses how Sargent's works (1974, 1984) on self esteem promote metacognition. This third section also demonstrates how self esteem plays an essential role in critical thinking and demonstrates how the ideas of Jackins (1982) and Sargent (1974) are similar to the works of Whimbey and Lochhead (1981).

Chapter VI presents four workshops designed to enhance critical thinking through stress management. The workshops are entitled: 1) Stress Management, 2) Stress and Critical Thinking, 3) Analyzing and Metacognition and 4)
Methodological Believing. Each of these workshops is aimed at high school teachers and consists of theory, practical applications and several hands-on activities and exercises.

Chapter VII concludes this paper with a brief summary and reflective statement. In the reflective statement I share with the reader how I have used both stress management and critical thinking during the process of writing this thesis.

Overview of Appendices

Each Appendix listed below is given a title followed by a brief description.

Appendix A, Special Place, is a written narration of a guided imagery exercise with built in associations.

Appendix B, Special Place Associations, consists of a worksheet to help participants identify specific associations of their Special Place.

Appendix C, Distress and Thinking, is a worksheet that demonstrates the effects of distress upon thinking.

Appendix D, Verbal Reasoning: Problem Solving - Example One, presents the format used by Whimbey and Lochhead (1981) for solving problems.


Appendix F, Analogies, provides the format used by Whimbey and Lochhead (1981) for solving analogy problems.
Appendix G, Analyzing and Metacognition, consists of two paragraphs, each one written from a different point of view.

Appendix H, Methodological Believing, is a list of questions designed to promote methodological believing.

Appendix I, Evaluation, is a sample of an evaluation form that participants complete at the conclusion of the last workshop.

Appendix J, Rank Order, is a list of the various combinations that are possible.

Appendix K, Music, is a list of musical selections that are used in various workshops.

Appendix L, Stress Management Techniques, provides a summary of the techniques used to manage stress.

Appendix M, List of Strategies to Promote Critical Thinking, provides a brief list of strategies that can be used to promote critical thinking.
CHAPTER I
THE NATURE OF STRESS

What is Stress?

Stress means different things to different people. Among non-professionals, one is likely to get a different definition from each person. Cox (1980) states that, "There is no single agreed definition in existence" (1). There is still much "confusion and controversy" (Monat and Lazarus 1991, 5) regarding the concept of stress despite the "considerable theoretical and empirical attention [it has received] in recent years" (Monat and Lazarus 1991, 5). However, among professionals, there are three different models of stress that are found in the literature: response, stimulus and interactional models (Cox 1980).

The Response Model.

In the response based model, stress is viewed as "the person's response to disturbing or noxious environments" (Cox 1980, 3). The response a person has is seen as the distress. Cox claims that this particular view of stress is rooted in the works of Selye (Cox 1980). However, Selye (1974) called stress producing factors "stressors" (27) and defined stress as "the nonspecific response of the body to any demand upon it" (Selye 1974, 27). According to Selye (1974), any demand made on the body is "specific" (24). The demands can be from any source (heat, cold, muscle strain, etc.). All these
various stressors, although different, have one thing in common: "they ... increase the demand for readjustment" (Selye 1974, 28). The demand for readjustment or return to homeostasis is nonspecific in that it requires some type of response, regardless of what the stressor may be. "Selye means that every stressor produces certain reactions specific to that stressor as well as nonspecific changes that result from all stressors" (Singer and Davidson 1991, 37).

Nonspecific "does not mean unspecified but rather occurring in response to every stressor (Singer and Davidson 1991, 38). While there is no specific response to a stressor, there must be some type of a response. Simply stated, various stressors, in addition to their specific actions, (such as cold producing shivering) also produce a nonspecific response. Some type of response is necessary by the body to adapt to normalcy. Selye (1974) considered this nonspecific response to a stressor as stress. Whether the stress producing activity or stressor is pleasant or unpleasant makes no difference. All that matters is, "... the intensity of the demand for readjustment or adaptation" (Selye 1974, 29).

Selye (1974) has documented that regardless of the stressors involved, they all produce an identical biochemical reaction in the body - an "increased cortical steroid output" (Singer and Davidson 1991, 38). (For a discussion of those biochemical changes see Selye, 1974).
The Stimulus Model.

In this model, an analogy is made between a piece of metal and the human body. A piece of metal can withstand a certain amount of stress. However, when the stress becomes too great, some type of permanent damage results. This engineering concept of stress has been applied to the human body. When stress becomes unbearable, "permanent damage, physiological and psychological can result" (Cox 1980, 13). With this engineering analogy one can see that just as different metals differ in their resistance to stress, so do individual people. One of the difficulties with this definition is determining what conditions "can be accepted as stressful" (Cox 1980, 15). "Does stress exist in the eye of the subject or in the eye of the experimenter?" (Cox 1980, 17).

Cox claims that stress has to be perceived by man and states that Lazarus (1966, 1976) "sees perceived threat as the central characteristic of stressful situations" (Cox 1980, 15). A threat "... involves a harm of some kind, only it is one that has not yet happened (Monat and Lazarus 1991, 3)". A threat provides "a warning that invites the person to take preventive steps ... or to ... mitigate the impending harm" (Monat and Lazarus 1991, 4). However, what is perceived as a threat can vary greatly from person to person. Because of the difficulties involved with the stimulus definition, some people argue for an interactional definition.
The Interactional Model.

Using the interactional model, stress is considered "... part of a complex and dynamic system of interaction between the person and his environment" (Cox 1980, 18). "Stress arises through the existence of a particular relationship between the person and his environment" (Cox 1980, 14). Stress is also defined as "the outcome of interactions between the organism and the environment" (Singer and Davidson, 1991, 37). The environment places demands upon the individual person and when an individual perceives that the demands exceed his or her capability to meet those demands, stress results. Simply stated, stress is "the reflection of a transaction between the person and his environment" (Cox 1980, 20-21). Sargent defines stress as a "mismatch or disruption between two aspects of an individual's experience" (Sargent 1984, 38). Experience can include "... ideas, expectations, attitudes, etc." (Sargent 1984, 37). Both Sargent (1984) and Cox (1980) talks about the individual's perception. Cox (1980) talks about the individual's perception and a "... comparison between the demand on the person and his ability to cope" (23). Sargent (1984) identifies a "mismatch ... between two aspects of the individual's experience" (37). While the wording between these two authors may differ, they agree that what is important is one's "cognitive appraisal" (Cox 1980, 18) of a situation that is potentially stressful and one's ability to cope with it (Cox 1980). An event in the environment is
"considered to be a stressor only if the organism's appraisals of it ... suggest that it is threatening or disturbing" (Singer and Davidson 1991, 37).

A Working Definition of Stress.

For the purpose of clarity and understanding I have decided to choose the Stimulus Model as a working definition of stress. I prefer to think of the word stress as a stimulus. Just as a piece of metal can receive too much stress, a person can receive too much stress as well.

Using this concept of stress one must, however, recognize that what is stressful is a subjective matter. In fact, what is stressful for one person may be pleasurable for another. For example, riding a roller coaster may be fun and exhilarating for some, while frightening and upsetting for others. Equally subjective, is determining how much stress is too much. Engineers can easily measure how much stress a piece of metal can withstand before damage results. However, with human beings, such measurement is tremendously more difficult, due to the complexities of the human mind and body as well as the individual differences that exist from person to person.

Stress can be thought of as a stimulus that is perceived differently by different individuals. This stimulus requires some type of response - a "demand for adjustment or adaptation" (Selye 1974, 24). Whether the situation one
faces is pleasant or unpleasant, the important thing is how one responds (Selye 1974).

The Nature of Distress

Many people think of stress as a negative phenomenon. Yet, the previous discussion has identified that stress is merely a stimulus. The fact is "stress may be pleasant or unpleasant" (Selye 1974, 31). Certain types of stress can be very beneficial, even motivating. Deadlines, responsibilities, even a game of chess can all be stressful. However, when people talk about negative or harmful stress, they are really referring to distress. Selye (1974) defines distress as "damaging or unpleasant stress" (31). Distress can also be thought of as too much stress, which is also unpleasant or damaging. Hereafter, the terms stress and distress will be used interchangeable, with distress meaning negative stress.

Threats.

Another view of distress is any perceived threat. "Lazarus sees [a] perceived threat as the central characteristic of stressful situations" (Cox 1980, 15) and argues that "stressful consequences are engendered only if the potential threat is perceived as such" (Singer and Davidson 1991, 44). Once an individual perceives a threat, (whether real or imaginary), the result is distress. Imagine that a worker who has just completed a huge project
is suddenly told, "the boss wants to see you, now!" If the worker perceives this as a threat (the threat of being fired), distress results immediately. In a school setting, some students feel threatened when they are called upon by the teacher. Imagine it is late at night and you hear someone trying to break into your home or apartment. In each of these circumstances, if there is a perceived threat, the result would be distress.

Therefore, distress can be thought of as damaging or unpleasant stress, or a threat to one's psychological or physical well-being. Distress is always unpleasant and "disagreeable" (Selye 1974, 31), and is harmful or damaging to one's physical, emotional and cognitive states.

**Effects upon Human Behavior.**

Distress has a number of specific effects upon human behavior. It "impairs awareness, restricting and reducing the flexibility of the aware function" (Sargent 1984, 46). With less awareness, the individual has less available knowledge. Thinking becomes impaired, making it difficult for the individual to find new or alternative ways of responding. (A more detailed discussion of this will take place in Chapter II). The result is that the individual's behavior becomes less flexible and more rigid. As distress increases, the individual resorts to earlier learned methods of coping (Sargent 1984).
Consider the following scenario. A student named Jim is asked to read his paper aloud to the class. As Jim begins to read, he stumbles over a few words. The class begins to snicker and the teacher reprimands the class. However, Jim begins to feel distressed and his awareness becomes restricted. When the teacher asks Jim to explain what he just read, Jim can't.

Even though he wrote the paper he is feeling too distressed to explain it. Another outburst of laughter occurs. Now Jim's awareness is totally focused upon his own distress. The teacher again reprimands the class and asks Jim for his explanation. Jim, who now feels overwhelmed with distress resorts to an earlier learned pattern of behavior - rebellion. He refuses to say anything. As the teacher tries to coax Jim to give his explanation, Jim's behavior becomes more rigid and he refuses to cooperate at all.

This scenario demonstrates the negative effects of distress upon behavior. Awareness is impaired, reducing flexibility in thinking and behavior. Behavior results in the use of an earlier learned pattern of coping with increased rigidity.

Consider another scenario demonstrating physical distress. During gym class, a student named Nancy is injured when a basketball hits her on the head. Nancy is sent to the school nurse who determines that there is no serious injury. The nurse can't even find a bump on Nancy's
head. But, Nancy complains of a headache and has an elevated blood pressure, pulse and respiration rate.

At lunch, Nancy's head feels worse and she is unable to eat. She has difficulty concentrating most of the day until her headache finally subsides. Nancy is physically distressed most of the day. She keeps thinking about her headache and tends to withdraw from all activity. Withdrawal is one of Nancy's earlier learned patterns of coping. This scenario, like the previous one, demonstrates the negative effects of distress upon behavior.

**Cognitive Rigidity and Flexibility.**

Just as behavior can become rigid as a result of distress, "cognitive rigidity" (Blum, 1982, 6) can result as well. Cognitive rigidity is "the inability to change one's set when external conditions demand it" (Blum 1982, 6). Blum (1982) defines "set ... [as] ... the tendency to perceive and act according to previous expectations" (6).

Recall the scenario with the student named Jim who was asked to read his paper aloud. As Jim became distressed, all he could focus on was his concern about the class laughing at him. He could not change his set. This is an example of cognitive rigidity. When Sargent (1984) talks about distress that is impairing, by "restricting and reducing the flexibility of the aware function" (46), he is describing cognitive rigidity.
The opposite of cognitive rigidity is cognitive flexibility, which is obtainable when one is not stressed. One has more awareness, flexibility and choice in one's thinking and behavior when one is in a state of cognitive flexibility.

The effect of distress upon behavior can be disastrous. Equally damaging can be the effect of distress upon cognition and thinking, which I will discuss in detail in the next chapter. It will become clear to the reader that there is a definite need for reducing the harmful effects of distress. In other words, there is a need for managing stress.
CHAPTER II
THE NEED FOR STRESS MANAGEMENT

Defining the Problem

A little stress may be motivating, even exhilarating. But too much stress (distress) is a problem, because it renders thinking very difficult and makes critical thinking nearly impossible. Sargent (1984) states that distress "impairs awareness" (46). He defines awareness as "the capacity to experience consciously" (Sargent 1984, 46). When individuals are under stress, their attention and awareness become restricted. For example, a student who is anxious about being called upon by the teacher will focus more attention on the anxiety. Less attention will be given to the classroom discussion. Teachers who complain about students who are not paying attention, are oftentimes accurately describing their students’ behavior. If their students are distressed, for whatever reason, their awareness will be impaired. Any individual, regardless of the setting, will experience a restriction of awareness, if distressed. One can begin to imagine the disastrous results that can take place if an individual tries to think when his or her awareness is restricted and attention is limited as a result of distress.

However, the problem that distress presents is far more encompassing. Not only is awareness impaired, but there is
an increased rigidity in thinking that results in regressive behavior (Sargent 1984). As Sargent states:

This happens first through loss of cognitive flexibility. Then as stress further increases, the nature of the rigidity itself begins to change. Earlier and more firmly entrenched behaviors begin to be observed. (Sargent 1984, 7)

As a person becomes more stressed, awareness restricts, thinking become rigid and the individual resorts to earlier learned patterns of coping. The scenarios described in the previous chapter demonstrate this phenomenon. Oftentimes, the earlier learned behavior is an inappropriate response. To make matters worse, the more distressed a person becomes, the more entrenched the behavior will become. The response to distress is what Sargent (1984) calls "automatic" (11) and "usually does not take place under the individual's control" (11).

To summarize: an individual's awareness becomes restricted and impaired when under stress. Both thinking and behavior become rigid and the individual usually resorts to an earlier learned pattern of response. This old response is oftentimes inappropriate for the new situation.

**Effects of Distress upon Critical Thinking**

Ennis defines critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do" (Ennis 1987, 10). If it is difficult to think when one is distressed, it is even more difficult to use critical thinking when distressed. Janis (1982) states that
"stress reduces the decisionmaker's problem solving capabilities" (70). The following description provides a good summary of some of the effects of distress upon critical thinking.

The person's attention and perceptions are somewhat impaired and there are various manifestations of cognitive rigidity. These cognitive deficiencies result in narrowing the range of perceived alternatives, overlooking long-term consequences, inefficient searching for information, erroneous assessing of expected outcomes . . . (Janis 1982, 70)

The idea of attention becoming impaired or restricted by stress is shared by Janis (1982), Sargent (1984) and Mandler (1982). The works of Janis and Sargent have already been discussed. Mandler (1982), however, states that in problem solving the "thought processes become narrowed in the sense that only obvious alternatives are considered" (102).

Meichenbaum (1983), another researcher of stress, claims that under "undue stress, the individual's cognitive ability (problem solving, memory, ability to focus attention) may be negatively affected as well" (64). Just as Sargent (1984) talks of awareness becoming impaired and behavior becoming rigid when under stress, Mandler (1982) identifies that "thought becomes repetitive" (102).

Nearly all aspects of critical thinking are affected by stress. Janis (1982) states that, "authentic warnings that arouse intense emotional reactions can lead to resistance to change, misattributions, erroneous judgments, and defective decisions" (75). These "authentic warnings" (77) can be the result of panic or other types of distress.
When people get distressed, they become "distracted and their train of thought gets derailed" (Janis 1982, 77). They are likely to become obsessed and dwell upon "the worst possible outcomes" (Janis 1982, 77).

This is exactly what was happening in the scenario described in Chapter I with the student named Jim. This type of situation can arise when a student is called upon to answer a question or defend a position. If the student becomes more concerned with the final outcome or becomes worried about looking like a fool to the rest of the class, that individual's thoughts can easily become distracted. Ironically, the very thing that the student fears (looking like a fool), can happen by not paying attention to the task at hand. Janis identifies as a source of stress the "concern of making a fool of oneself in the eyes of others" (Janis 1982, 70).

The greatest impediment to the decision making process occurs when there are "imminent threats of physical suffering" (Janis 1982, 70). It is ironic that at a time when critical thinking may be most needed, because imminent threats are possible, critical thinking is least likely to take place.

The overall effect of distress upon critical thinking is that the individual's awareness or attention becomes restricted, one's set becomes rigid and one's thoughts become repetitive. Critical thinking virtually ceases to exist and
the individual's thoughts and behavior may resort to an earlier learned pattern of coping (Sargent 1984).

**Critical Thinking Can Be Distressing**

Metacognition which Beyer (1987) defines as "thinking about thinking" (192) is another aspect of critical thinking. If one discovers that one's thinking is wrong or is flawed, that can be distressing. Let me share a personal experience as a student. One day in a graduate class, we were reviewing a multiple choice science questionnaire. The instructor was listing everyone's answer to a particular question (ranging from "a - e") on the board. Each student in the class gave a reason for his or her selection. As I began to think about my thinking, I realized that my thinking was flawed. I began to feel uncomfortable. As we continued this process, I began to feel reluctant to answer any more questions. Other students in the class also expressed some hesitancy and reluctance (distress) as they discovered that their thinking was incorrect.

The following scenario is another example of metacognition becoming a source of stress. A student believes he knows how to solve a math problem. He is so confident that he even shows other students how to do it. Later, he engages in metacognition and discovers his thinking was wrong. Immediately, this individual feels stupid and embarrassed (distressed). Some people do not experience distress if they discover that their thinking is wrong.
Remember, what is stressful for one person may have no effect upon another. If a student, or anyone experiences distress when engaging in metacognition, further critical thinking (analyzing, drawing logical conclusions, etc.) could be hampered by this distress. There are certain actions which teachers can take to help lower their students' distress. (These will be discussed in Chapter III).

**Egocentrical Thinking**

Paul (1990) defines egocentricity as a "tendency to view everything in relation to oneself" (548). "Egocentricity is one of the fundamental impediments of critical thinking" (Paul 1990, 548). An individual whose thinking is egocentric, would not be open to other people's points of view. In terms of stress, if people feel threatened, they will most likely defend their positions and not consider other points of view. The more threatened they feel, the more entrenched their behavior will become (Sargent, 1984).

However, an individual does not need to feel threatened in order to think egocentrically. Some individuals "because of their consistent commitment to advance their narrow vested interests" (Paul 1990, 556), refuse to consider anything contrary to their beliefs.

Although egocentrical thinking may be initially brought on by stress, one may not necessarily be aware of the stress. A person can engage in egocentrical thinking as a learned
response, without perceiving any threat. Such an individual is unaware of feeling threatened (distressed).

People prone to egocentric thinking will only consider their own point of view, unless another opinion supports their basic idea. Such individuals become entrenched in their own ideas and thoughts. As is characteristic of reactions to distress, they develop cognitive rigidity and are unable to be flexible in their thinking. Since egocentric thinking is strengthened by distress, it becomes necessary to learn methods of reducing the harmful effects of distress. These methods will be discussed in Chapter III.

Methodological Believing

Elbow (1986) defines methodological believing as "the equally systematic, disciplined, and conscious attempt to believe everything no matter how unlikely or repellent it might seem" (257). This is another aspect of critical thinking that can be greatly impaired by stress. Elbow (1986) suggests a "five minute rule" (274), where a group or an individual stops criticizing and tries to believe in the opposing view. However, he points out that "the believing game is harder for people to learn" (Elbow 1986, 274) when they are already invested or polarized into a position. "It is also harder to use" (Elbow 1986, 274) when it appears as though there is one single correct solution. In this instance, "people feel as though they are being asked to
entertain views which can be...[demonstrated as] wrong" (Elbow 1986, 274).

Sargent (1984) has identified that one often feels uncomfortable when one looks at or considers something that is different from one's perspective. He claims that an individual will usually feel as if he or she is giving up something.

Methodological believing becomes even more difficult to do, if not impossible, once one engages in egocentric thinking. Paul repeatedly states that one's thinking is often egocentric (Paul 1990).

The main problem associated with methodological believing is distress. Both Elbow and Sargent talk about feelings. If one feels distressed, methodological believing becomes exceedingly difficult to do. Few people, if any, would willingly adopt another person's point of view that could be proven wrong. Furthermore, Sargent has identified that people often feel uncomfortable when they look at or consider something that is different from their perspective. He claims people usually feel as if they are giving up something (Sargent 1984). Methodological believing becomes even more difficult to do with each additional degree of investment in a particular position or point of view.

However, even less polarized individuals can experience distress when engaging in methodological believing. Naturally, the degree of distress varies from individual to individual. But, the basic effect that
distress has upon various types of critical thinking skills remains present. Only the degree of intensity varies.

Summary

It is difficult, if not impossible to engage in methodological believing if one's thinking becomes egocentric. The more invested a person is in a particular point of view, the more difficult it is to engage in methodological believing. If people feel as though they might lose an argument, they are likely to experience distress.

Distress greatly impairs critical thinking by restricting one's awareness and attention, and increases rigidity in thinking that results in regressive behavior (Sargent 1984). One's ability to solve problems and make decisions is reduced by stress (Janis 1982).

Once an individual perceives a threat, (whether real or imaginary), decision making is impaired (Janis 1982). Egocentric thinking further contributes to the problem, by not allowing an individual to see other points of view, rendering methodological believing nearly impossible.

Distress has been shown to adversely affect critical thinking by restricting an individual's awareness or attention. In addition, rigidity replaces flexibility in one's cognitive set (Blum 1984) and one's thoughts become repetitive (Sargent 1984).
To combat the negative affects of distress a variety of stress management techniques can be utilized. The next chapter describes some of these techniques and explains how to implement them.
CHAPTER III
STRESS MANAGEMENT TECHNIQUES

Self Esteem Techniques

The following techniques are designed to increase one's sense of worth, one's self image and the overall feeling one has of oneself.

Favorite Activity.

Favorite Activity is a stress reduction technique designed to enhance self esteem by having an individual focus on activities that are enjoyable. This technique is one that I adapted from "Twenty Things You Love To Do" (Simon, Howe, Kirschenbaum, 1972, 30).

Procedure. Each person lists on a sheet of paper several activities that he or she enjoys doing. I usually have each person identify the strength, skill or talent they use when engaging in each activity. For example, dancing requires coordination and stamina. An individual who enjoys dancing would identify these two qualities (coordination and stamina) as a strength, a skill or a talent. There may be other qualities as well.

Rationale. This activity reduces stress by enabling the individual to focus attention on something pleasant (non-distressing). In addition, the technique has the individual pay attention to his or her positive qualities.
Special Place.

Special Place (Sargent 1976) is a guided imagery exercise which I have adapted and developed. It is usually done with narration (see Appendix A) and soft music in the background. I prefer to use a cassette recording of Rampal's *Japanese Folk Melodies* (Appendix K), because it creates less associations with everyday life than other types of music. The use of music is not absolutely necessary, although it helps to establish a mood. This activity combines several stress reduction techniques and will be discussed again in this chapter in under the section entitled, Changing Emotional States. (See Appendix A).

**Procedure.** Each individual in the group listens to a specially prepared narration with optional soft, oriental music playing in the background on a cassette. At the conclusion of this activity, people are asked to identify on a sheet of paper the positive qualities they experienced in their special place.

**Rationale.** The Special Place (Sargent 1976) technique promotes self esteem by having people identify their positive qualities when in a safe, non-threatening environment. Individuals list their positive qualities on a sheet of paper. They are encouraged to continue to appreciate their positive qualities, in order to develop a solid sense of themselves. "The process of developing this solid ground is
that of celebration" (Sargent 1974, 16). "Celebration" (Sargent, 1974, 16) is the term Sargent uses to describe this process of self appreciation.

Scanning.

Scanning, described by Jackins (1982) as "kind of a rapid review" (19) can be used as a stress reduction technique, by briefly identifying a particular feeling, quality or behavior (Sargent 1974). Sargent (1974) recommends "scanning all ... successes" (18) as a way of enhancing self esteem. The term scanning is found in the writings of both Sargent (1974) and Jackins (1982) and can be used in a variety of applications.

Procedure. In this application, scanning is used to briefly help people identify positive qualities. A variation of this technique consists of taking one positive quality and identifying all the times and places one has used that quality (Sargent 1974).

Rationale. The scanning technique promotes self esteem by having the individual identify his or her positive qualities. In times of distress one usually focuses on one's negative qualities, thus distorting one's self image. Sargent (1974) has identified that "distress distorts" (17) and hence he encourages the use of self esteem.
Changing Emotional States by Building Associations

My experience has been that many people do not realize the extent of their ability to change their feelings. The following discussion describes several ways to change one's emotional state. Much of this material is based upon Neuro-Linguistic Programming (NLP), a process developed by Bandler and Grinder (1979) and further developed by Robbins (1986), who based his works on that of Bandler and Grinder.

Building associations is a way to change one's emotional state. Associations are built upon experiences. Pleasant experiences have pleasant associations; while unpleasant experiences often have unpleasant or distressing associations. One can learn to build pleasant associations with various experiences, and recall either the experience or the pleasant feeling associated with it or both. If one has a pleasant experience and associates pleasure with that experience, whenever one thinks about the experience, one feels pleasure. This was part of the rationale for the Favorite Activity technique. Making and keeping the connection between the pleasant feeling and the experience is called "anchoring" (Robbins 1986, 315). Robbins says that "you can create a consistent triggering mechanism that will automatically cause you to create the state you desire" (Robbins, 1986, 315) by anchoring. "Anchoring is a way to give an experience permanence" (Robbins 1986, 315).
**Procedure.** One first identifies an emotional state (feeling) that one has had and deliberately intensifies it by focusing on it. (The scanning technique can be used to accomplish this). When one reaches the peak of this desired emotional state, the individual anchors or associates that emotional state with a cue. The cue may be either visual, physical or auditory in nature.

**Discussion.** A good example of a visual anchor is the American flag. Many people, although not all, associate patriotism with the flag. The President often stands near the flag, thus anchoring an individual's association with the flag and the image of the President, himself (Robbins, 1986).

Auditory anchors are used a great deal in advertising. Whenever McDonalds plays their jingle, "You deserve a break today," they are using an auditory anchor. They have built an association between that melody and their food products.

Physical anchors may be somewhat more difficult to use because the anchor, in this case, a touch, must be reproduced with exactly the same amount of pressure each time. The procedure is exactly the same as described above. One creates a desired state and anchors that emotional state. In this instance the anchor is a physical one, usually a touch on some spot on one's body. A performer who suffers from nervousness might squeeze his or her toes together as a physical anchor to relaxation. No one in the audience would
ever suspect anything. Theoretically, if the anchor is done correctly, the desired emotional state will be experienced.

Relating this to an academic setting, imagine the possibilities of students who anchor themselves to feeling successful or confident in relation to problem solving. Consider the possibility of using this technique to instantly create a state of relaxation for students who become anxious or nervous when defending their ideas or giving explanations. Anchoring is used in the Special Place activity. In Appendix A the reader will find certain words underlined. These underlined words serve as anchors.

Management of Feelings

Recent Pleasant Experience.

This technique is designed to focus the individual's attention on something which is pleasant, rather than dwelling upon something that is unpleasant (distress). The technique requires the individual to shift his or her attention away from a distressing thought to something which is pleasant that was recently experienced.

The idea for this technique comes from a training program I did several years ago (Sargent 1977). Sargent (1974) uses the phrase "new and good" (8) rather than my phrase recent pleasant experience. Jackins (1982) uses
virtually the same technique, however, calls it "remembering pleasant things" (27).

Procedure. To do this technique, one merely identifies any recent experience that was pleasant. The experience can be written down on paper, stated verbally or done silently to oneself. This is a very convenient technique because it can be utilized anywhere. One can identify recent pleasant experiences while traveling, waiting for an appointment or going to work or school.

Rationale. Since "distress distorts" (Sargent, 1974, 17), it is necessary to find a way out of distress. "Our minds work by association, and if we can remember one good thing the good feeling will come along with it" (Sargent, 1974, 18). By remembering a recent pleasant experience, "the memory will push some distress aside, and the mind will begin to clear" (Sargent 1974, 18).

Special Place.

This guided imagery activity, which has already been discussed (see Self Esteem Techniques) is mentioned again as a method for managing feelings. In addition to promoting a sense of self esteem, which would help a person appreciate himself or herself, this activity also promotes several pleasant feelings. The specific feelings include safety, relaxation, calmness and confidence.
Procedure. Although the procedure for this activity has already been described, it is important to note how this activity promotes pleasant feelings. The narration that is provided (Appendix A) contains the names of specific emotional states (feelings). With practice a person can merely think of his or her Special Place and instantly experience all the pleasant sensations of this Special Place as well.

Rationale. This technique provides an individual with several pleasant feelings. A person is taught how to use his or her Special Place in the midst of some type of distressing situation, rather than using it as an escape mechanism. The technique has a calming effect and enables an individual to keep sight of one's positive qualities. I base this statement on my own experience, having conducted several workshops.

Favorite Activity.

Favorite Activity is a delightful type of self inventory that is based upon the "Twenty Things You Like to Do Strategy" (Simon, Howe, Kirschenbaum, 1972, 30). This technique asks a participant to identify his or her hobbies and other enjoyable activities and list them on a sheet of paper. Although it has already been discussed (see Self Esteem Techniques), it is included here as a way of managing feelings.
Procedure. After listing one's favorite activities, the individual identifies the pleasant feelings associated with each activity. Sometimes I have participants pay attention to how long it has been since they have engaged in a particular activity they enjoy. Engaging in an activity that provides pleasure is another way to manage or change feelings.

Rationale. Favorite Activity provides a way of changing one's feelings from unpleasant (distressing) to pleasant, by shifting one's attention. By focusing upon pleasant activities, an individual can reexperience the pleasant sensations or feelings associated with his or her Special Place.

Scanning.

The scanning technique, which has already been discussed (See Self Esteem Techniques) is listed here again, because individual feelings may be scanned. For example, a person wishing to experience the feeling of relaxation, would identify all the times or places he or she felt relaxed.

By recalling a time when a specific feeling was experienced, or a place where one experienced a particular emotional state, one can begin to experience that feeling again. For example, an individual who feels nervous and wishes to feel relaxed, could scan all the times or places he or she felt relaxed and would begin to feel more relaxed.
Many people are quite skilled at scanning unpleasant feelings. They experience unpleasant feelings such as anxiety and recall all the other times they have felt anxious. This increases anxiety even further. There is some evidence that some people are not aware that they are doing this (Sargent 1984).

**I Like How I Feel Blank.**

"I like how I feel blank" (Sargent 1974, 21) is a stress reduction technique that has the participant identify any enjoyable feeling and the association with that feeling. The following sentence demonstrates this technique. "I like how I feel ____ when I ____." (Sargent 1974, 21). In the first blank, the feeling one experiences is identified. The second blank is for identifying the activity associated with the feeling. For example, I like how I feel relaxed when I listen to soft music.

A variation which oftentimes makes this technique easier to do consists of reversing the order of the sentence. Thus, the sentence becomes *When I ____ I feel ____*. For example, *When some one smiles at me, I feel warm*.

This technique requires a person to identify a pleasant feeling and the association with that feeling. Such action enables the person to shift attention away from distress to something which is pleasant (Sargent 1974). This technique, along with all the other techniques described in this section
are based on the idea that pain and pleasure are incompatible (Sargent 1976, Robbins 1986). Whichever of these two emotions is the stronger will overpower the other. The intent of these techniques is to have a person switch his or her focus of attention away from distressing emotions to non-distressing or pleasant emotions, thus managing or changing one's feelings (Sargent 1974, 1984).

Relaxation

Introduction.

A considerable amount of literature has been written about the use of relaxation as a stress management technique. It is beyond the scope of this thesis to include such a discussion and listing.

However, the following section discusses specific ways teachers can help their students to relax in their classrooms. Much of this material is based upon the works of Lozanov (1979) and Dhority (1991).

Safety.

One of the ways teachers can help students relax in the classroom is to provide a safe environment, where students feel free to express their opinions and ideas. This can be accomplished by encouraging a supportive environment, while discouraging and even prohibiting sarcasm, ridicule and
hostile remarks towards each other. A supportive environment encourages students to take risks, by eliminating anxiety or fear of a hostile response towards students' thinking and ideas.

**Rationale.** The "absence of threat is utterly essential to effective instruction" (Hart 1983, 164). Students who feel threatened, anxious or intimidated (distressed) are very unlikely to volunteer their thoughts or ideas. The exact opposite conditions, where students feel safe, promote an atmosphere of cooperation and trust. "The optimal learning environment is relaxed and non-stressful" (Dhority, 1991, 12).

**Use of music.** The use of music in the classroom "can of great assistance" (Dhority, 1991, 62). Dhority has found that "playing certain classical music in the background at a barely audible level during much of the class had a very positive effect" (Dhority, 1991, 63). He has discovered that playing music at a "barely audible level" (Dhority 1991, 63) helps build rapport and provides a "cohesive element" (Dhority, 1991, 63).

Much of Dhority's work is based upon Lozanov (1979), who recommends the use of music in the classroom. In particular, classical music, such as *Eine Kleine Natchtmusic* and *Divertimento*, both by Mozart (Appendix K) is recommended. I personally find *Canon in D* by Pachelbel (Appendix K) to have a calming effect and have used it in my work.
Relaxing techniques. Benson (1975) has done a considerable amount of research on relaxation. In addition, Setterlind and Patriksson (1981) have developed a relaxation training program that meets three times a week to teach students relaxation skills over a six to eight week period.

Many stress management programs primarily rely on relaxation training, which consists of systematically flexing and relaxing one's muscles. The training can also include some type of meditative exercise as well. While this is an effective technique, it presents practical problem in terms of implementation in a classroom setting. The technique requires about 20 minutes to do. From a practical point of view, most teachers do not have the time or space to implement such a program. I have included this technique in this discussion because relaxation training is quite well known as a legitimate technique in the field of stress management.

Having personally experienced relaxation training as a participant at a variety of stress management workshops, it appears to me that this technique is not practical for implementation in a regular classroom (academic) setting. It is quite appropriate for a physical education class (Setterlind and Patriksson 1981).
Summary

With the exception of relaxation training, all of the techniques (Appendix L) that I have discussed can be implemented into a classroom setting. The techniques fall under the following four categories: 1) self esteem enhancement 2) changing emotional states, 3) managing feelings and 4) relaxation. How these stress reduction techniques can be used to enhance critical thinking is discussed in the Chapter V. First, however, it is only necessary to identify and describe some critical thinking skills, which is done in the next chapter.
CHAPTER IV
CRITICAL THINKING SKILLS AND STRATEGIES

Introduction

In the previous chapter I discussed several stress management techniques. In this chapter I will discuss some specific critical thinking skills and offer specific teaching strategies for teachers at the secondary level.

Ennis (1987) defines critical thinking as "reasonable, reflective thinking that is focused on deciding what to believe or do" (45). Although he identifies many critical thinking skills, I have chosen to discuss only the following: metacognition, methodological believing and frame of reference. For each critical thinking skill, I will provide a theoretical framework and will present some strategies that teachers can use to promote the use of these skills with their classes.

I have selected these particular skills because they are frequently found in the literature on critical thinking (see Beyer 1987, Costa 1984, Elbow 1986) and they can serve as good examples to demonstrate how stress management can be used to enhance critical thinking. Ways in which stress management enhances critical thinking will be discussed at the end of this chapter.
Metacognition

Beyer (1987) states that "thinking about thinking is metacognition" (192). Costa (1984) defines metacognition as "our ability to plan a strategy for producing what information is needed" (57). He also says that metacognition means "to reflect on and evaluate the productivity of our own thinking" (Costa 1984, 57). In a way metacognition can be thought of as "standing outside of one's head and directing how one is going about executing a thinking task" (Beyer 1987, 192). Another way to describe metacognition is "thinking about how to accomplish a thinking task" (Beyer 1987, 192).

It is interesting to me, as I attempt to write this section, that I find myself doing exactly what Beyer describes: thinking about my thinking, deciding how to organize my thoughts, asking myself how I am going to accomplish this task. In essence, I am using metacognition to write this section.

Some researchers consider metacognition as "the highest, most sophisticated level of thinking" (Beyer 1988, 68). This finding may be due to the fact that metacognition "employs very specific procedures or skills ..." (Beyer 1988, 68). These "procedures or skills" (Beyer 1988, 68) include planning, monitoring and assessing. Planning involves setting a goal, making a plan to achieve that goal and considering obstacles to the plan (Beyer 1988). Costa (1984) considers planning as "the major component of metacognition"
Monitoring involves checking the plan to make sure that one doesn't skip or take steps out of sequence (Beyer 1988). Assessment consists of judging and evaluating the process used to achieve the goal as well as the accomplishment of the goal itself (Beyer 1988).

Metacognition directs various cognitive operations being used to produce a product (Beyer 1987). It is not just one skill. Rather it is a complex set of several skills.

**Teaching Metacognition**

How does one teach metacognition? First, a teacher must introduce a thinking skill. Beyer (1988) identifies several thinking skills including organizing, classifying, comparing, choosing and many others. Then, the teacher can either give the students a step by step procedure of how to use a particular skill or let the students try to use a skill on their own.

The first approach is referred to as "direct" (Costa 1984, 58): while the second approach is referred to as "inductive" (Beyer 1988, 222). Costa believes that the inductive method improves metacognition to a greater degree than the direct method because it does not "place an even greater burden on the students' ability to attend" (Costa 1984, 58). Beyer agrees with Costa that, by using the inductive approach, students can develop thinking strategies. However, he points out that the students' thinking can be flawed. While the direct approach eliminates such a problem,
it "requires that the teacher know in some detail how to execute the skill being introduced (Beyer 1988, 224). If a teacher does not have this knowledge, "this strategy is extremely difficult to use" (Beyer 1988, 224). Beyer states that the direct approach "has its advantages and disadvantages" (Beyer 1988, 224).

It is the teacher who must decide which approach to use. Since different students respond and learn differently, it might be best to experiment with both methods. In some instances it might be ideal to use a combination of both approaches.

**Evaluating Metacognition.**

With such a complex set of skills, one wonders how to determine whether or not students are using metacognition. Costa claims that one can determine this by asking students to describe "what goes on in their heads when they are thinking" (Costa 1984, 62). He states that students can "list the steps and tell where they are in the sequence of a problem-solving strategy" (Costa 1984, 62). They can describe their thinking, indicating "the pathways [that] they took" (Costa 1984, 62).

Costa believes that metacognition "must be included in the curriculum if thinking is to become a durable reality for the 90's and beyond" (Costa 1984, 62). In the next section I will discuss and demonstrate some strategies that can be incorporated into the curriculum to promote metacognition.
Strategies to Promote Metacognition.

The "Either-or Forced Choice" (Simon, Howe, Kirschenbaum 1972, 94) is a strategy that I have adapted to promote metacognition. (Henceforth I will refer to this strategy as Either-Or).

Procedure. The teacher divides the classroom into two halves. The right side of the room is designated as vanilla ice cream; while the left side of the room is designated as chocolate ice cream. Students are to choose which flavor they prefer by moving to that side of the room. Prior to making their selection, the teacher informs the class that there are no right or wrong answers for this activity. After this warm up, the teacher can proceed with the actual topic. Several examples follow to provide the teacher with ideas demonstrating how to use the Either-or strategy.

Example. Using the same format described above, the teacher of a Social Studies Class asks the class the following question, Would you rather be a senator or a representative? The right side of the room is for senators and the left side is for representatives. Students make a choice by moving to an appropriate side of the room. They are encouraged to discuss with each other the reasons for their choices. After a few minutes, the teacher asks some students to explain how they arrived at the choice they selected. The students are asked to think about their thinking - to explain how they made their selections. After 3 - 4 students on one side of the room have had an
opportunity to explain their thinking, students from the
other side of the room are given the same opportunity.
Metacognition is encouraged by asking students to explain how
they make their choices.

It is imperative that negative comments, such as "that's
a dumb reason", etc. be prohibited as such comments inhibit
risk taking and self disclosure. Initially, it is
recommended that students move their desks to the sides of
the room, creating a wide path in the center. After the
completion of each Either-Or strategy, students return to the
center of the room (Simon Howe, Kirschenbaum 1972).

The metacognitive aspects of the Either-Or strategy are
obtained by asking students how they arrived at their choice
or decision. Mary Anne Wolff (1990), a teacher of critical
thinking has stated that the Either-Or strategy can be used
to promote metacognition when students are asked such a
question.

Additional Examples. To further illustrate how this
strategy can be used in other classes, the following examples
are provided.

Science Class: Would you rather be a neutron or a
proton?
Mathematics Class: Would you rather be a fraction
or a decimal?
English Class: Would you rather be an adjective
or an adverb?
Gym Class: Would you rather be a sit up or a push up?

Metacognition in Problem Solving.

Metacognition can easily be promoted in any class by asking students to explain how they arrived at their conclusion. It can be particularly useful even when students arrived at an incorrect answer. As students begin thinking about their thinking, they can discover their own mistakes. Rather than merely telling students that their answer is right or wrong, a teacher can enable them to think about their thinking by asking students how they arrived at their answer or conclusion. Furthermore, metacognition allows the students to discover where they may have erred in their thinking.

While some teachers may complain that asking students to think about their thinking and explain their thoughts requires too much time, it may actually save time and eliminate confusion. If a student's thinking is flawed, that student needs to learn why his or her thinking is in error. It is a well known fact that students who discover something on their own are much more likely to remember it.

Methodological Believing

Methodological believing is defined by Elbow (1986) as the "systematic, disciplined and conscious attempt [of believing] everything no matter how unlikely or repellent it
might seem - to find virtues or strengths we might otherwise miss" (Elbow 1986, 257). It can be thought of as "the disciplined procedure of not just listening but actually trying to believe any viewpoint or hypothesis" (Elbow 1986, 260). In order to accomplish this one must try to see the opposing point of view. Rather than arguing, Elbow recommends asking "what do you see?" (Elbow 1986, 276). He states:

"Give me the view in your head. You are having an experience don't have: help me to have it." (Elbow 1986, 261)

Such requests help one to believe and to understand the "vision" (Elbow 1986, 261) in the other person's head.

Understanding and believing an opposing point of view can be difficult to do. Many people are more skilled at criticizing and finding "flaws or contradictions" (Elbow 1986, 257). This "systematic ... and conscious attempt to criticize everything ..." (Elbow 1986, 261) is what Elbow terms "methodological doubt" (Elbow 1986, 261). Perhaps doubting is easier than believing since "doubt implies disengagement from action or holding back, while belief implies action" (Elbow 1986, 256).

One of the difficulties with methodological believing is that "trying to believe someone we disagree with makes us feel vulnerable" (Elbow 1986, 266). An individual often feels uncomfortable when looking at or considering something that is different from his or her perspective (Sargent 1984). This problem is exacerbated by egocentric thinking - the
"tendency to view everything in relationship to oneself" (1990, 548).

Ironically, methodological believing is the antithesis of egocentric thinking and promotes what Paul terms "fairmindedness" (Paul 1990, 198), which he defines as "willingness and consciousness ... to treat all viewpoints alike, without reference to one's feelings or vested interests" (Paul 1990, 198). Paul states that "we must ... be fair to views we oppose" (Paul 1990, 198).

How Does One Teach Methodological Believing?

Elbow (1986) suggests that whenever "some idea or view is not getting a fair hearing," to engage in methodological believing for five minutes. During this time all criticism is suspended and "everyone should try to believe it" (Elbow 1986, 274). To help people believe, Elbow suggests that individuals answer the following questions:

What's interesting or helpful about this view? What are some intriguing features that others might not have noticed? What would you notice if you believed this view? If it were true? In what sense or under what conditions might this idea be true? (Elbow 1986, 275)

People must "look for favorable evidence and reasons to support the belief in question" (Elbow 1986, 276). To accomplish this requires "intellectual empathy" (Paul 1990, 554), which is defined as "[u]nderstanding the need to imaginatively put oneself in the place of the others to genuinely understand them" (554).
Elbow (1986) claims that the "believing game" (274) is difficult to "learn in debates or discussions where people are too invested or polarized into dug-in positions (274). "It is also hard to use on issues where it looks as though there is a single ..." (Elbow 1986, 274) right response.

Despite these difficulties, methodological believing appears to be an extremely useful and valuable critical thinking skill. It involves "fairmindedness" (Paul 1990, 198) and suspending or deferred judgment (Beyer 1988) and is a way to dismantle "egocentric" (Paul 1990, 115) thinking. How to use methodological believing is described in Chapter VI. However, some practical strategies are offered in the next section.

**Strategies for Using Methodological Believing.**

Methodological believing is a critical thinking skill that can be incorporated into any subject. One way to incorporate this technique is in the form of a debate. After the teacher has explained the basic concept of methodological believing to the class, the students can be divided into two opposing groups. Using Elbow's (1986) "five minute rule" (274), each group would attempt to believe the opposite point of view for a five minute period of time. To facilitate this belief, students "must look for something interesting or helpful about this view" (275). They can be asked to look for "some intriguing features" (275) of this point of view.
and to notice "under what conditions might this idea be true?" (275).

**Role play.** Another way the skill of methodological believing can be introduced is role playing. When students are debating, they can be asked to switch roles. This requires students to see the other person's point of view and to argue for it. Some debating teams use this approach. It is a useful way to help students prepare for the actual debate.

A variation on this theme is using methodological believing to resolve a conflict. Individuals with opposing points of view can switch roles with each other. Suddenly, each student is arguing for the opposing point of view. Such a procedure is likely to provide a much greater understanding of each other's position.

**Interpreting.** The interpretation of a text or written statement provides another occasion to use methodological believing. "The most natural occasions are discussions where the issue is a matter of ..." (Elbow 1986, 273) attempting to understand what an author writes in a book of either fiction or nonfiction. It is important for people to realize that "there is no single simple right answer" (Elbow 1986, 273) and that "it helps to hear lots of views or hypotheses - even odd ones" (273).

The classroom provides numerous opportunities for the utilization of methodological believing. "The believing game encourages ... the act of seeing the strength in someone's
else's position and the weakness in one's own" (Elbow 1986, 289). Such discussions, through the use of methodological believing promote "dialectical thinking" (Paul 1990, 546), which Paul defines as "thinking ... to test the strength and weaknesses of opposing points of view (Paul 1990, 548).

In summary, the "believing game" (Elbow 1986, 279) can be incorporated into any classroom by having students use the "five minute rule" (Elbow 1986, 279) in an attempt to understand and believe an opposing viewpoint, whether that opposing viewpoint is that of the teacher, author or even a classmate.

Frame of Reference

What is a Frame of Reference?

A frame of reference is "a person's most basic beliefs and values (Swartz 1990, 112). These "differing assumptions and value systems ... give rise to conflicting testimony and interpretations" (Wolf 1986, 37). Simply stated, a frame of reference is a point of view or perspective.

The importance of being able to identify a frame of reference cannot be underestimated. Wolff states that "the issue of bias or distortion plays an important role" (Wolff 1986, 37) in all frames of reference, and "the ability to detect bias and distortion is critical for all students" (Wolff 1986, 36). There is a danger that students will "come to accept more premises uncritically as common knowledge" (Wolff 1986, 37) unless they recognize that information
presented to them "was developed by people with ..." (37) biases of their own. Wolff (1986) notes that even a researchers' "use of evidence will be influenced by his or her frame of reference" (38).

In addition to recognizing an author's frame of reference, "students need to realize that ... their own biases, not just those of published authors, need to be scrutinized" (Wolff 1986, 38). This is not an easy task to accomplish. It is one thing for students to look for bias and distortion in a published work. It is another matter for those students to recognize and identify their own biases. Egocentric thinking is likely to get in their way. "Until we discover our own egocentric thinking, we will not be able to monitor or work through it" (Paul 1990, 137). People who think egocentrically "assimilate everything they hear or experience to their point of view" (Paul 1990, 138).

How to Identify Frames of Reference.

Wolff has developed a frame of reference model that is "based on a conception of the relationship between an author's frame of reference and what he or she writes" (Wolff 1986, 37). The model connects the subject a person is studying with the type of information the person believes is important to his or her beliefs or values (Wolff 1986). "Teachers have reported that the model is effective in helping understand contrasting perspectives" (Wolff 1986, 41). The model consists of having students read two
different accounts of "the relationships between !Kung men and women" (Wolff 1986, 39). Two very different written descriptions of the !Kung culture are presented to the class, emphasizing different roles for men and women. Students, with the help of a teacher, compare and contrast these two accounts and become aware of the differences between the two versions. The teacher helps students to identify the different frames of reference by having students set up categories that "could contribute to such a framework" (Wolff 1986, 30). Such categories might include: "age, time of field work, specialty with a discipline" (Wolff 1986, 39).

The frame of reference model, according to Wolff, "should be used to stress the values and difficulty of arriving at a consensus about reality, rather than to unmask the biases of various authors" (Wolff 1986, 40).

Beyer has developed a series of steps to identify what he calls "a point of view" (Beyer 1988, 342). He emphasizes identifying "the subject or topic being presented" (342) and the "words of phrases that suggest how the author personally feels about the subject" (342). Next, Beyer (1986) recommends identifying "any unstated assumptions" (342). He also recommends looking for aspects of the subject that have not been mentioned. The last two steps include identifying the "author's position" (Beyer 1988, 342) and stating "what the author must believe" (342).
Strategies to Identify Frames of Reference.

The following strategies are designed to help students identify various frames of reference.

Small group work. Students are divided into groups of 4 - 5, depending upon the class size. Each group is to discuss and answer the following questions which have been adapted from Beyer (1988).

1. How does the author feel personally about the subject? What are some words or phrases that serve as an example?

2. Are there any unstated assumptions that the author seems to make?

3. What is the position of the author? Is the author for or against the topic being discussed?

4. What do you think the author believes?

After about 15 - 20 minutes, each group shares its results with the rest of the class. Differences of opinion are welcomed. However, students need to support their opinions with facts and reasons.

Another format using small groups is based on both Beyer's (1988) and Wolff's (1986) work. Students read two accounts on the same subject topic, from two very different frames of reference. The class is divided into two groups and each group discusses and analyzes one of the accounts, attempting to identify the author's frame of reference. Each group answers the questions presented in the previous
section. After about 15 - 20 minutes, each group shares its results with the other group.

To help students identify the different frames of reference, categories can be listed on the board that would establish a "framework" (Wolff 1986, 39).

**Identifying one's own frame of reference.** The following strategy which is based on the "Rank Order Strategy" (Simon, Howe, Kirschenbaum 1972, 58) is offered to help students recognize their own frames of reference. Students rank order three items in order of importance. Next, as each student states his or her order aloud, it is written on a board until all the possible combinations have been listed. Students are then invited to explain why they chose their particular order.

**Example.** Students are asked to rank order the following items in order of importance: quartet, band, orchestra. There are six possible combinations (Appendix J). Students are asked to give reasons for the order they selected and identify their own frames of reference. A student who selected the order in which the items were presented might say, that she chose a quartet first because "when you play in a quartet, your playing is exposed and the audience hears every note". Her frame of reference was based upon being a musician.

Another student who chose the order of orchestra, band, quartet, based her frame of reference on the size and
reputation of ensembles. She might claim that she chose an orchestra because she was thinking of the Boston Symphony.

A third student chose the order of band, orchestra quartet, because he plays on the football team and claims that the high school band enhances the spirit of the game by playing whenever the team scores a touchdown. His frame of reference was football.

This strategy utilizes the critical thinking skills of frame of reference and metacognition. In the process of reflecting upon their thinking, the students identify their frames of reference.

**Stress Reduction to Enhance Critical Thinking**

All of the techniques and strategies discussed in this chapter are enhanced by the reduction of stress. These strategies depend upon a low level of stress for their successful implementation. A high level of stress would result in distress, the effects of which have already been discussed in Chapter II. This section identifies and discusses the atmosphere that is needed to implement the strategies already discussed.

In order to implement the strategies of metacognition, methodological believing and frame of reference successfully, an atmosphere of cooperation, trust, safety and a low level of risk must exist. A stressful atmosphere is the antithesis of this atmosphere because an "optimal learning environment is relaxed and non-stressful" (Dhority 1991, 12). These
strategies cannot be implemented if students are experiencing a high level of stress.

Asking students to think about their thinking and to share their thoughts requires an atmosphere of trust and safety (Dhority 1991). This can be accomplished by respecting and accepting the responses of students, rather than judging and using negative criticism such as "that's wrong". A genuine curiosity by the teacher can help to promote metacognition in students. Responding to students with such remarks as "that's interesting - how did you arrive at that conclusion" allows and encourages students to examine their own thinking.

Particularly with the Either-Or strategy, which asks students to publicly state their opinions, there must be a spirit of cooperation - encouraging and supporting each other's ideas in a non-competitive atmosphere. Otherwise, students will feel threatened (distressed) and their thinking and actions will become inhibited (Sargent 1984). Teachers can do much to cultivate this spirit of cooperation and support by modeling the very behavior desired in their students. At the same time, teachers can create a supportive environment by eliminating ridicule and sarcasm. All of these actions help to build an atmosphere of trust and cooperation - where students will feel safe enough to risk self-disclosure.

Methodological Believing perhaps requires an even greater need for stress reduction. Sargent (1984) has
identified that one often feels uncomfortable when considering something that is different from one's perspective. Since any perceived threat causes distress (Sargent 1984), one must be able to lower one's own stress level. The use of self esteem training as an effective stress reduction technique has been demonstrated by Sargent (1984).

Beyond the specific techniques of self esteem enhancement, there is much that a teacher can do to develop a classroom environment where students feel safe enough to consider opposing points of view and to play the "believing game" (Elbow 1986, 274). Teachers can demonstrate nonjudgmental responses to student opinion, rather than judging something as wrong. Teachers themselves, can engage in methodological believing and encourage students to do the same. "Fairmindedness" (Paul 1990, 198) can be promoted by having any parties with opposing points of view attempt to see the other side with a spirit of curiosity. Teachers and students can both learn to respond to opposing viewpoints with such responses as "that's interesting; let me see if I can believe this from your point of view." Metacognition can also be used with methodological believing in order to have one think about his or her thinking in relation to an opposing point of view. This easily leads to identifying a frame of reference.

Students need to feel safe enough to express their opinions regarding the author's frame of reference and
eventually their own. A high level of stress (distress) will make this process extremely difficult (Sargent 1984). Students need to be respected and supportive for sharing with the class their own frame of reference.

**Summary**

Cooperation, trust, support and low risk are characteristics of a classroom operating on a low level of stress. Such an environment is necessary to incorporate successfully the critically thinking strategies (Appendix M) that have been discussed in this chapter.

In the next chapter, I will further examine the relationship between critical thinking and stress management and will demonstrate the similarities that exist among certain stress management techniques and critical thinking skills.
CHAPTER V
INTEGRATION OF STRESS MANAGEMENT AND CRITICAL THINKING

Introduction

In the previous chapter a number of critical thinking skills and strategies were discussed. That chapter concluded with a discussion on how stress reduction plays an important role in the facilitation of critical thinking.

This chapter will demonstrate how stress management plays an integral role toward enhancing critical thinking. I will demonstrate how the ideas of Beck (1979), Meichenbaum (1983), Sargent (1974, 1984) and Jackins (1982) can be shown to significantly enhance critical thinking. In some instances, I will demonstrate that many of their writings relate directly to critical thinking.

Specifically, I will show how Beck's work as a cognitive therapist is nearly identical with metacognition. Then, I will demonstrate how the techniques developed by Meichenbaum also serve to promote metacognition. In the third section, I will show how Sargent's work in stress management can be used to improve one's problem solving ability and is essential to critical thinking. I will also show how a co-counseling model developed by Jackins (1982) and further developed by Sargent (1984) is similar to the works of Whimbey and Lochhead (1981).

These experts are essentially using aspects of critical thinking in their own works, although they do not identify it
as such. For these experts, I will first describe the technique(s) they use. Then, I will provide an explanation of how the techniques enhance critical thinking by reducing stress. Finally, I will demonstrate how the techniques either play an integral role or in some instances are in essence critical thinking.

Beck and Metacognition

Techniques.

As a cognitive therapist, Beck in collaboration with other practitioners (1979) has demonstrated a variety of techniques for patients suffering from depression. Some of these techniques bear a striking resemblance to critical thinking skills, particularly metacognition.

In discussing the objectives and goals of cognitive therapy, Beck et al. (1979) states that "various verbal techniques are used to explore the logic behind and basis for specific cognitions and assumptions" (4). The techniques are designed to portray and test the "patients' specific misconceptions and maladaptive assumptions" (Beck et al. 1979, 4). The patient learns:

(1) to monitor his negative, automatic thoughts (cognitions); (2) to recognize the connections between cognitions, affect and behavior; (3) to examine the evidence for and against his distorted automatic thoughts .... (Beck et al. 1979, 4)

One of the techniques Beck uses with his patients is the "Daily Record of Dysfunctional Thoughts" (Beck et al. 1979, 4). The patient records specific events and what he or
she feels and thinks at the time. Later, with the help of a therapist, these "cognitions and underlying assumptions are discussed and examined for logic, [and] validity ..." (Beck et al. 1979, 4). In essence, the patient is asked to think about his or her thinking and to challenge the assumptions.

According to Beck et al. (1979) "patients frequently find themselves ... questioning some of their conclusions or predictions" (5). He identifies as "examples of self-questioning ... What is the evidence for my conclusion?" ... [and] ... "Are there any other explanations?" (Beck et al. 1979, 5). The use of such questioning strongly resembles the works of Paul (1990) and his use of "Socratic questioning" (269).

To summarize, Beck has patients record their negative thoughts or beliefs during the week. Later he meets with his patients and has them think about their thinking (metacognition) and challenge assumptions. He also encourages his patients to ask themselves questions seeking evidence or proof for their conclusions.

Enhancement of Critical Thinking.

It is my belief that some of Beck's cognitive techniques could be used to reduce classroom stress among those students who suffer from anxiety. Causes of anxiety, for these students might be worrying about appearing foolish or fearing they will be ridiculed for giving a wrong answer.
Janis (1982) has identified that the "concern of making a fool of oneself in the eyes of others" (70) as a source of stress. Beck's cognitive therapy techniques could help students reduce their stress by having them identify and challenge their assumptions, determining the validity of their beliefs and asking themselves questions. Such questions might include the following: When was the last time the class laughed at me for giving a wrong answer? If that happened once, does that mean it will occur again? What can be done to prevent this from happening again?

As was identified in Chapter Two, the overall effects of distress upon critical thinking are that the individuals' awareness or attention becomes restricted, one's set becomes rigid and one's thoughts become repetitive. Therefore, a reduction in stress would produce the desired opposite effect, thus enhancing critical thinking rather than inhibiting it.

It should be noted that not all students have negative cognitions (thoughts). But, those who do could benefit by an adaptation of Beck's cognitive therapy techniques.

The Essence of Critical Thinking.

Many of Beck's cognitive therapy techniques are essentially critical thinking skills. By having his patients keep a record of their thoughts, then challenge their underlying cognitions and assumptions, Beck is having patients engage in metacognition. Furthermore, he has them
look at their cognitions for "logic" (Beck et al. 1979, 4) and "validity" (4). He encourages his patients to question themselves in order to seek evidence or support for their conclusions, which has been identified by Paul (1990) as a critical thinking skill.

In essence, Beck has his patients engage in several aspects of metacognition and other critical thinking skills. Beck et al. (1979) teach patients to challenge their cognitions and assumptions and to seek evidence for their conclusions. In order to challenge one's cognitions or thoughts, one must first "think about thinking" (Beyer 1987, 192). One must also "reflect on and evaluate the productivity of ... [one's] own thinking ..." (Costa 1984, 57). Essentially, Beck teaches his patients to use metacognition and to seek evidence to support their answers.

A major component of cognitive therapy is to "monitor ... automatic thoughts (cognitions)" (Beck et al. 1979, 4). Beyer (1988) has identified monitoring as a specific process of metacognition. One's ability to "examine the evidence" (Beck et al. 1979, 4) of one's thoughts through self questioning has been identified by Hunkins (1989) as a critical thinking skill. In fact, Hunkins states that students must learn to ask their own questions, rather than depend upon the teacher for questioning.

Much of the work that Beck does with his patients consists of teaching them to think critically. Although he does not identify these skills as critical thinking, he does
state that without the use of self-questioning, which he claims helps in examining one's cognitions, an individual becomes locked into "thoughtless thinking" (Beck et al. 1979, 5).

Meichenbaum and Metacognition

Techniques.

Meichenbaum (1977) has developed a variety of techniques to manage stress and to change behavior. Based upon the works of Beck et al. (1979), Meichenbaum (1977) targets many of his techniques to interrupt "automatic thoughts" (209) which he describes as "internal dialogues" (209). He defines these dialogues as thoughts that "seem to emerge automatically and extremely rapidly" (Meichenbaum 1977, 209-210). To counteract this automatic thinking, Meichenbaum (1977) has developed a three step process consisting of (1) self observation, (2) imitation of "incompatible thoughts or behaviors" (223) and (3) "cognitions concerning changes (224).

**Self observation.** In this phase the client monitors his or her thoughts or feelings.

Through heightened awareness and deliberate attention, the client monitors, with increased sensitivity, his thoughts, feelings, physiological reactions, and/or interpersonal behaviors. (Meichenbaum 1977, 219)

**Initiation of incompatible thoughts.** During this phase the client deliberately engages in thoughts and behaviors that interfere with "maladaptive" (Meichenbaum 1977, 223)
ones. Jackins (1982) and Sargent (1974) both use this technique with their clients. Sargent (1974) oftentimes has a client directly counter the distressing thought by having the client say the exact opposite of whatever he or she thinks or feels. For example, if a female client believed that she was powerless, Sargent would probably have her say "I am a powerful woman", repeatedly. He would also have her seek evidence to support this statement.

Meichenbaum (1977) states that self-observation gives one the opportunity for making changes with one's thoughts and behaviors. What one says to oneself must be different from old thoughts or behaviors.

Cognitions concerning change. This is the third phase where the client seeks evidence to support the new cognitions. Meichenbaum (1977) states that what a patient considers as evidence becomes critical. However, he does not talk about the use of questioning as a way of clarifying or seeking evidence which can be found in the works of Beck et al. (1979), Paul (1990) and Hunkins (1989).

The Enhancement and Essence of Critical Thinking.

Meichenbaum (1977) discusses the idea of distorted thought patterns and bases much of this discussion on the works of Beck. Such distorted thought patterns include: making conclusions without evidence, exaggerating the meaning of an event, disregarding the important aspects of a
situation of life, rigid thinking, such as "good or bad, right or wrong and overgeneralizing" (Meichenbaum 1977, 192).

The three step process that Meichenbaum has developed is designed to manage stress by interrupting these distorted patterns of thinking. By eliminating the distortion in one's thinking patterns, Meichenbaum is promoting critical thinking. Moving out of a clinical setting to a more academic one, the reader can see that much of what Meichenbaum is attempting to do bears a striking resemblance to critical thinking. Getting individuals to base conclusions upon evidence is an aspect of critical thinking (Paul 1990). The ability to step out of "dichotomous reasoning" (Meichenbaum 1977, 192) and become more flexible would enable one to see other points of view. This ability clearly relates to "frame of reference" (Wolff 1986, 38) and "fairmindedness" (Paul 1990, 198). Reducing or eliminating "overgeneralization" (Meichenbaum 1977, 192) would also promote critical thinking.

Meichenbaum (1977) states that the patient is "taught to recognize and monitor his cognitions as well as test and validate the relationship between cognition and affect" (192). This what happens when one engages in metacognition - where one thinks about one's thinking and begins questioning one's thoughts. According to Meichenbaum (1977), these "distortions ... of one's cognitive set, the belief system ... that support attitudes and conceptions are challenged" (193) once they are recognized. Part of this process begins
with self monitoring. Beyer (1988) has identified monitoring as an important aspect of metacognition.

Summary.

Meichenbaum (1977) attempts to interrupt distorted thinking that produces dysfunctional behavior through a three step process. To manage stress, he has his clients examine their thoughts and behavior. It is ironic that the very process he uses to manage stress consists of several aspects of critical thinking, including metacognition, identifying frames of reference and eliminating bias and distortion. While there are many sets of critical thinking skills involved, Meichenbaum's overall approach appears to have his clients monitor their thoughts and behavior and actually engage in metacognition. Many of the skills he teaches his clients are in fact critical thinking skills. While neither he nor Beck identify them as such, there can be little doubt that the monitoring of one's thoughts is in essence metacognition.

Co-Counseling and Problem Solving

This discussion primarily concerns itself with the similarity between the co-counseling model as developed by Jackins (1982) and further developed by Sargent (1974) and the problem solving model developed by Whimbey and Lochhead (1981). While it may be useful for the reader to have an understanding of the theory behind co-counseling, it is more
important for the reader to recognize the similarity between these two models. Therefore, the following discussion focuses upon the format used in co-counseling, rather than the theoretical framework.

The Co-Counseling Model and a Problem Solving Model.

Jackins (1982) has developed a peer counseling program that bears some similarity to the works of Whimbey and Lochhead (1981) in problem solving. Jackins’ program consists of two people taking turns counseling each other. One person acts as the counselor, whose primary task is to listen (Jackins 1982). The other person, acting as the client uses a variety of techniques designed to “discharge emotional or physical tension” (Jackins 1982, 9). Discharge includes laughing, crying, shaking, yelling, trembling and non-repetitive talking (Jackins 1982). The two people take turns counseling each other during an agreed upon duration of time. Thus, when the client’s session is over, the client becomes the counselor and the counselor becomes the client. This entire process is identified as “co-counseling” (Putnam 1985, back page) or “Re-evaluation Counseling” (Back Page).

Sargent (1974) further developed Jackins’ model of co-counseling by introducing the concept of “celebration” (Sargent 1974, 19). Evison and Horobin (1985) describe Sargent’s celebration technique as a “strategy [that] involves people learning to appreciate themselves” (Evison and Horobin 1985, 12). Sargent places more of an emphasis on
self appreciation than does Jackins. Otherwise, the basic processes of co-counseling vary little in format. This fact is mentioned because much of the material that I have adapted is based upon the works of Sargent and will be explored more fully in the next chapter.

The co-counseling model is similar to Whimbey and Lochhead's problem solving model (1981). In both models, there is a listener and a speaker. In the problem solving model, one person listens while the other person thinks aloud and tries to solve the problem. They reverse roles just as the counsel and client reverse roles in the co-counseling model. A more detailed description of Whimbey and Lochhead's problem solving model is discussed in the next chapter.

**Enhancement.**

The process of co-counseling helps to free one "from the effects of ... distress" (Putnam 1985, back page). Distress, as discussed in Chapter One, has been shown to impair thinking (Sargent 1974, 1984), rendering critical thinking extremely difficult. Since the co-counseling process helps to free oneself from distress (Jackins 1985), it can be considered to enhance critical thinking because the reduction or elimination of distress results in more awareness (Sargent 1984) and increases flexibility in one's thinking (Sargent 1984).

At the conclusion of a co-counseling session, "re-evaluation" (Jackins 1982, 12) takes place. Assuming
that the client has discharged his or her distressed feelings, the client can think with greater clarity and has more awareness (Sargent 1984). During re-evaluation, a client re-examines his or her thinking which bears a striking resemblance to metacognition. The client also re-examines his or her behavior noting some changes to make or changes that have already taken place. This re-examination of behavior also closely resembles critical thinking.

Summary.

Co-counseling provides a process whereby a person can reduce distress feelings. The result of co-counseling frequently brings about an increase in one's awareness (Sargent 1984) and clarity in one's thinking (Jackins 1985, Sargent, 1984). In co-counseling, a major role of the counselor consists of providing attention to the client. Similarly, in Whimbey and Lochhead's problem solving model, the listener also provides attention to the problem solver.

In the next chapter, I will fully integrate these two processes and present a practical application. I will also demonstrate how several of the co-counseling techniques can be used to reduce distress and thereby enhance critical thinking.
CHAPTER VI
A SERIES OF WORKSHOPS:
ENHANCING CRITICAL THINKING THROUGH STRESS MANAGEMENT

Overview

This chapter consists of four separate workshops: 1) Stress Management, 2) Stress and Critical Thinking, 3) Analyzing and Metacognition and 4) Methodological Believing. Each workshop is designed to accommodate 15 high school teachers, although the workshops could be conducted with as few as 10 and as many as 20 participants. The duration of each workshop consists of three hours of training which carefully integrates theory with practical applications. The actual training is experiential, consisting of activities and exercises enabling participants to experience various processes, skills and techniques. The training is also didactic in nature, providing teachers with the opportunity to develop skills that they can use in their own classes and teach to their own students.

The basic format of each workshop consists of a brief presentation followed by an exercise or activity and discussion. Under ideal circumstances the entire training is conducted over a four week period with teachers participating in one three hour workshop each week.

While individuals have the right to pass, participation is strongly encouraged. Many of the exercises involve working with a partner. Participants are urged to work with
different people throughout the workshop in order to obtain a richness of diversity.

Workshop I: Stress Management

Overview.

This workshop is comprised of a variety of techniques and activities to reduce stress. The agenda consists of the following:

1. Name Tags (activity)
2. Recent Pleasant Experience (technique)
3. Stress and Distress (presentation)
4. Distress and Thinking (worksheet)
5. Special Place (guided imagery and worksheet)
6. Favorite Activity (technique)
7. Scanning (technique)
8. Summary

Name Tags.

Each person is given a 3 x 5 card and is instructed to write the following information on various corners of the card. In the upper left hand corner, they are to list a place they've visited and enjoyed. In the upper right hand corner, they are to list a place they would like to visit. In the lower left hand corner, they list an activity they enjoy doing (a hobby) and in the lower right hand corner, they identify the feeling they experience when they do this activity. In the middle of the card, each person writes
their first name. The use of 3 x 5 cards provides a larger space to record this information rather than adhesive name tags. Participants carry their cards to eliminate the need for adhesive tape or safety pins.

Next, everyone is instructed to stand up and move around the room looking for similarities and differences between themselves and others regarding the information on the name tags. A recording of Mozart's *Eine Kleine Nachtmusik* (Appendix K) is played as people mill about the room. After a few minutes, people are asked to sit down. It is pointed out to people that they can reduce stress by focusing on pleasant thoughts and associations like those on the 3 x 5 cards. Sharing is encouraged by asking, What was that like for people? The point is also made that in many instances we have both similar and different interests. Just as our interests are both similar and different, our responses to stress may be similar or different as well.

This activity serves as an ice breaker and an introduction to various techniques of stress management. The duration of this activity is about ten to fifteen minutes.

[Note: This activity is adapted from the Change Agents Training Institute, "Name Tag Strategy" (Sargent 1976)].

**Recent Pleasant Experience.**

Participants are given an opportunity to introduce themselves and share a recent pleasant experience — anything that happened recently that was pleasant. Individuals who
can't identify any recent pleasant experience or something that's "new and good" (Sargent 1974, 18) may share an old and good experience. People always have the right to pass. However, individuals who can't identify any recent pleasant experience are asked the following question, What's the least bad thing that's happened to you, recently?

[Note: The new and good technique (Sargent 1974, 18) has been adapted from a technique that I learned at the Change Agents Training Institute (see Sargent 1977).]

Presentation on Stress and Distress.

After the Recent Pleasant Experience activity, the following points are made about stress to the participants in the workshop.
1. There are several different definitions of stress.
2. The term stress is subjective.
3. Stress can be motivating.
4. Too much stress or unpleasant stress results in distress, which is harmful.

The participants are then informed about the following points regarding distress.
1. Perception is distorted by distress (Sargent 1974).
2. Thinking is impaired as a result of distress (Sargent 1984).
3. Habits or automatic responses are triggered by distress (Sargent, 1984).
Stress and Distress Exercise.

Following this brief presentation, participants are given a handout entitled "Distress and Thinking" (See Appendix C). Upon completion of this written exercise a discussion of the material takes place. Participants are asked to share some of their observations about the effects of distress upon their thinking. Specific examples relating to the classroom are encouraged and personal experiences are welcome.

The discussion which runs from 20 - 30 minutes or longer focuses on how distress adversely affects thinking. The written exercise takes between about 10 minutes to complete.

Special Place.

The Special Place activity is a guided fantasy that I have developed. It is a multi-purpose activity that combines relaxation with specific associations. These associations include strong feelings of self esteem, safety, relaxation, and a sense of critical thinking ability, that are connected to various imagery of the Special Place (Sargent 1977). (See Appendix A).

Following the Special Place activity, participants complete a written exercise that enables them to identify specific associations of their Special Place. (See Appendix B).
**Favorite Activity.**

This is an exercise done with a partner with one person listening while the other person speaks. The speaker talks about a favorite activity. It doesn't matter what the activity is as long as the speaker feels comfortable sharing this information with the listener. In the event that there is an odd number of people, the workshop leader can work with whoever doesn't have a partner. In fact, anytime someone is lacking a partner, the workshop leader serves as a partner to that individual.

The listener is to refrain from asking any questions and to pay close attention to the speaker, noting any changes in body posture, facial expressions, etc. When the speaker has finished the roles are reversed.

The duration of this exercise lasts approximate 2 minutes each way. The speaker is not required to speak for the entire duration. It is more important for the speaker to share some meaningful experiences, rather than occupy every second by talking.

A discussion follows the completion of this exercise. Questions such as *What was that like?* can be useful in generating a discussion. The entire exercise, including the discussion takes about 20 minutes to complete.
"Scanning" (Jackins 1982, 19) is a technique where one rapidly reviews all the times and places one has experienced a particular emotional state or a behavior (Jackins 1982). Any experience, emotional state or behavior can be scanned. In this exercise, which is done with a partner, one person acts as the listener while the other acts as the speaker. The speaker scans the following for a duration of two minutes each:
1. when or where he or she has thought about something critically.
2. when or where he or she has felt relaxed.

To scan, one thinks aloud, briefly identifying the given topic to be scanned. For example, if I scan times I've thought about something critically, I recall the following: a form I received in the mail, a discussion I attended, when I voted, an article I read, a lecture I heard, etc. After taking my turn I switch roles with the listener giving him or her a chance to do some scanning.

The scanning exercise is followed by a brief discussion with a duration of 5 to 10 minutes. During this time, participants can share with the entire group what they experienced as a listener or as a speaker.
Summary.

As a way of summarizing and encouraging use of decision making and conclusions (critical thinking skills), participants are invited to share with the group some techniques that they found useful or something they learned during this workshop. This summary takes place at the conclusion of the scanning activity and is completed within 10 minutes.

Closure.

Each person completes the following sentence, verbally. "I like how I feel _____ when I ____" (Sargent 1977, 21). Each person names the feeling and the activity or behavior. Some people find it easier to work backwards, identifying the behavior or activity first, then the feeling.

Workshop II: Stress And Critical Thinking

Overview.

This workshop combines stress management techniques with critical thinking skills. It consists of the following activities and exercises:

1. Introductory Activities
2. Critical Thinking - Problem Solving Procedure
3. Stress Reduction
4. Verbal Reasoning
a) Problem #1
b) Problem #2

5. Analogy Problems
6. Metacognition Exercises
5. Summary and Closure

Introductory Activities.

Participants share their names and a recent pleasant experience aloud to the entire group. Next, each participant selects a partner, preferably someone new. New partners usually provide different interactions and experiences for each other. Each person shares some old and good memories with the other person.

Following these two introductory activities participants work in pairs with one person acting as the speaker and the other person acting as the listener. The speaker scans enjoyable activities for about a minute. The roles are then reversed.

The final introductory activity consists of a shortened version of the Special Place activity, which lasts approximately five minutes. In this shortened version, the workshop leader suggests that people recall the pleasant associations of their Special Place, noting the positive feelings about themselves, and how they feel relaxed and peaceful in their Special Place. Participants may wish to refer to their Special Place Associations handout (Appendix B).
Critical Thinking - Problem Solving Procedure.

The following exercise combines stress management with problem solving - a critical thinking skill. Emphasis is placed upon the actual process, rather than one's ability to solve the problems.

This exercise is done with a partner. One person is the problem solver, while the other person is the listener. The actual problem to solve will be presented, shortly. Before attempting to solve any problem, Whimbey and Lochhead (1981) suggest that the problem solver:

1. Maintain a strong belief that through "careful, persistent analysis" (Whimbey and Lochhead 1981, 28) problems can be solved.
2. Be accurate.
3. Break the problem into parts.
4. Avoid guessing. [Since Whimbey and Lochhead (1981) present a specific model for problem solving, guessing is discouraged].
5. Get a clearer understanding of the problem by creating a mental image of the ideas or by drawing a diagram. Relate to familiar experiences.

Whimbey and Lochhead (1981) suggest that the listener:

1. Continuously check the problem solvers' accuracy.
2. Does not let the problem solver get ahead of himself or herself.
3. Listen and work along with the problem solver, pointing out errors.
4. Never give the away the answer.
5. Require the problem solver to think aloud.

Before beginning the actual problem solving exercise, the problem solver does a few stress reduction techniques. First he or she shares a few recent pleasant experiences with the listener. Then the problem solver scans the times he or she has successfully solved (any) problems. During this entire process, the listener pays careful attention to the speaker.

**Problem One: Verbal Reasoning.**

Jack is shorter than Phil but taller than Val. Val is shorter than Jack but taller than Pete. Which man is tallest and which is the next to the tallest? (Whimbey and Lochhead 1981, 35)

The format for actually solving this problem is found in Appendix D. Before proceeding to the next problem, the listener and problem solver switch roles. The new problem solver initially does the stress reduction techniques previously described, before attempting to solve the next problem.

**Problem Two: Verbal Reasoning.**

Cathy knows French and German, Sandra knows Swedish and Russian, Cindy knows Spanish and French, Paula knows German and Swedish. If French is easier than German, Russian harder than Swedish, German is easier than Swedish, and Swedish is easier than French, which girl knows the most difficult languages? (Whimbey and Lochhead 1981, 42)

The answer to this problem can be found in Appendix E.
After everyone has had an opportunity to solve a problem a
discussion is encouraged. Participants are asked to
identify what critical skills and stress management
techniques they used to solve the problem. The duration of
this entire exercise, including the discussion can take at
least an hour to complete.

**Analogies.**

The following exercises are to be done in pairs,
similar to the previous group of exercises. People take
turns solving the problems aloud, with one person being the
problem solver and the other person being the listener. The
problem solver does some stress reduction techniques before
beginning the actual problem. It is suggested that the
problem solver begin with a minute of recent pleasant
experiences followed by a minute or two of scanning
successful problem solving experiences.

**Analogy Problem.**

The problem solver does the following problem thinking
aloud with the listener paying careful attention to the
speaker. Solve the following problem: "Horse is to animal
as ______ is to _______" (Whimbey and Lochhead 1981,
166). For the format for solving this problem see Appendix F.
Metacognition.

Metacognition is often defined as "thinking about thinking" (Beyer 1987, 192). Due to the fact that distress is a subjective term, it would be difficult to present a paragraph which would create distress for everyone who reads it.

Although no specific text is offered, the following exercise is offered as a suggestion to enable people to clarify their thinking. This exercise is done in pairs with a speaker and a listener.

The speaker does the following:
1. Some recent pleasant experiences
2. Scans for relaxation
3. Responds aloud to a distressing statement

The listener provides careful attention. At step number three, the listener asks the speaker the following questions: What makes you think that? What evidence do you have? How do you know that? The purpose of these questions is to get the speaker to think about his or her thinking. The listener may ask the speaker to identify any stress and reduce it. This is a particularly good exercise to do before reading a controversial article.

As a person reads a controversial article, he or she begins to experience various emotions in response to the article. Particularly, if the reader is opposed to the article, feelings of distress may be aroused. The reader,
with the help of a partner, identifies this or her distress and engages in metacognition.

After a person engages in metacognition, he or she may discover that his or her thinking is flawed. This discovery could cause that person to become distressed. It would then be necessary for that person who is experiencing distress to reduce it using any of the stress management techniques already discussed.

Summary and Closure.

As a summary activity, each person identifies one aspect of the workshop that they found particularly useful and states their finding aloud. This activity involves each participant in decision making, another critical thinking skill and provides an excellent way of summarizing the workshop.

For a closing activity, each person very briefly tells the group about a problem that they have solved, successfully. The problem does not need to be related to the workshop.

Workshop III: Analyzing and Metacognition

In this workshop participants are taught several critical thinking skills which can be grouped under the title of analyzing. (The term analyzing for the purposes of this thesis, will refer to looking for flaws in logic, bias, distortion, and identifying frames of reference). They are
next taught to identify any stress they experience while analyzing and how to manage (reduce) it.

The main purpose of this workshop is to teach participants how to reduce stress in order to enhance their critical thinking skills.

Overview.

The agenda of this workshop consists of the following techniques, activities and exercises:

1. Recent Pleasant Experience (technique)
2. Definition of Terms (activity)
3. Discussion
4. Process for Managing Stress (precedes critical thinking exercise)
5. Critical Thinking – Analyzing (exercise)
6. Challenging Assumptions (exercise)
7. "I Learned ..." (Simon, Howe, Kirschenbaum 1972, 163) (activity)

Introduction.

Each person shares a recent pleasant experience and an example of how they are a critical thinker. Participants are asked to get into groups of four. If there is an uneven number, one group can consist of three members. Each group develops a definition for each of the following terms, with an example if possible. The terms are: 1) flaws in logic 2) bias 3) distortion 4) frames of reference.
After about ten minutes, one group selects one member from their group to present their definition to the other groups. The definitions can be written on a chalk board or merely presented orally. Members of any group may ask for clarification or offer their own comments.

When all the definitions and/or explanations are presented, the workshop leader gives a brief summary and identifies these skills as part of critical thinking. It is important that the participants understand these terms before proceeding to the next phase of the workshop.

Analyzing.

Participants are first introduced to a stress management process to use before engaging in the critical thinking skill of analyzing. The following exercise may be done with a partner or by oneself.

Step 1. Scan for some distress. The distress can be anything that was recently experienced that was unpleasant. It may be useful to have people first identify different types of distress, with the workshop leader listing them on a chalk board. Examples might include: fear, anger, frustration, anxiety, worry, etc).

Step 2. Identify the distress and label it.

Step 3. Identify automatic thoughts. These are thoughts that occur automatically in times of distress. It may be helpful to think aloud.
Step 4. Reduce the distress using any stress reducing technique (scanning, recent pleasant experiences, special place, etc.). If people are working as partners, the listener can help the speaker by giving the following directions: 1) Tell me something you recently experienced that was unpleasant. 2) Identify the distress. 3) Tell me what your thoughts are when you experience this distress? After each person has had an opportunity to go through this process, they read an excerpt (See Appendix G) and attempt to analyze it and use metacognition. If they experience distress, they repeat steps two and three. A brief discussion of 10 minutes is encouraged at the conclusion of this exercise.

Challenging Assumptions.

In the following exercise, participants identify ideas they believe to be true (assumptions) and challenge them.

1. Scan for distress. (Distress identified from the previous exercise may be used).
2. Identify the distress.
3. Identify automatic thoughts (Appendix F) and write them down on paper.
4. Reduce distress (using whatever techniques preferred).
5. Challenge you automatic thoughts (Appendix G)
6. Re-evaluate your beliefs.
Following this exercise, a discussion ranging from ten to twenty minutes is encouraged.

These exercises involve several skills that must be practiced in order to develop proficiency. Participants will need to review this exercise several times. It is suggested that this format be used each time prior to engaging in critical thinking.

Summary and Conclusion.

Each person completes the following sentence, aloud. "I learned ..." (Simon, Howe, Kirschenbaum 1972, 163). This activity serves as a summary and actively involves the participants, by having them make a choice and contribute to the summary. It also provides closure to the end of this workshop.

Workshop IV: Methodological Believing

Overview.

This workshop consists of the following activities exercises and techniques:

1. Working with a partner (Introductory techniques)
   a) Recent Pleasant Experiences
   b) Scanning
   c) Reflecting upon one's special place

2. Co-Counseling Format
a) stress reducers (techniques)
b) Special Place (technique)
c) Respond to Handout (exercise)

3. Reverse Roles
4. Variations
5. Summary
6. Evaluation (written)

Introduction.

This workshop begins with the usual round of recent pleasant experiences and each person identifies one way he or she has used critical thinking, recently. Following this introductory exercise, participants engage in the following activities as a way of reviewing various stress reduction techniques.

Each person does the following exercise with a partner. One person is the speaker, while the other person is the listener.

1. half a minute of recent pleasant experiences
2. one minute scanning a favorite pleasant feeling
3. two minutes relating to positive emotions and/or qualities of one's special place

Partners switch roles. The speaker becomes the listener and the listener becomes the speaker.
Methodological Believing.

Methodological Believing is more than a role play. It is an attempt to believe and understand the opposing point of view. This exercise is done with a partner holding an opposing point of view. Any topic may be used as long as both partners do not hold the same point of view. A controversial subject, such as abortion may prove to be an excellent topic, if the two people have an opposing point of view. One person is the speaker, while the other person listens. The speaker tries to believe the opposing point of view. To help the speaker reduce any distress he or she may experience, the following procedure is suggested.

1. Do some "recent pleasant experiences" and other stress reducers (scanning, etc.).

2. Relate to the Special Place, identifying some of the positive emotions and qualities experienced there.

3. Answer the questions in the handout on Methodological Believing (See Appendix H).

After about ten minutes the roles are reversed, with the speaker becoming the listener and the listener becoming the speaker. Following this exercise participants discuss their reactions to this exercise.
Variation.

Repeat the exercise above with the following addition. Begin the exercise by identifying any stress (physical and emotional), such as tightness in the stomach, shallow breathing, anxiety, nervousness, fear, or anger. Continue to reduce stress until the level of stress is either tolerable or barely noticeable. Next, proceed with methodological believing.

This exercise can be practiced individually, or with a partner. "If people have sufficient success with this trial mode, they will be willing to use methodological belief more extensively and in a more focused way" (Elbow 1986, 275).

Additional Suggestions.

It is recommended that during the course of this workshop, especially during any discussions, individuals who have an opposing point of view be given an opportunity to engage in methodological believing. It is also recommended that a variety of stress reduction techniques be used if the workshop leader notices that the participants are becoming distressed. There may be a considerable amount of discussion following these exercises.

Summary.

Since this is the last workshop, it is recommended that a portion of it be spend summarizing the various skills and techniques from this workshop and the previous ones as well.
Rather than the workshop leader providing a review, participants are asked to recall any particular technique or skill that they especially found useful. The various skills and techniques are listed on newsprint or on a chalkboard.

**Evaluation.**

In an effort to continuously improve upon these workshops, I usually request that participants complete an evaluation form (See Appendix I). The use of such a form enables the workshop leader to assess the effectiveness of the content and usefulness of the activities and exercises.
CHAPTER VII
SUMMARY AND REFLECTIVE STATEMENT

Summary.

This thesis began with the question, "What is Stress?" Three different models of stress were presented and the nature of distress was discussed. The effect of distress upon human behavior was presented along with a few scenarios depicting the negative effects of distress.

The problem of stress was defined and the specific effects of distress upon critical thinking were documented. It was also demonstrated how distress can promote egocentric thinking, while rendering methodological thinking very difficult to accomplish.

Having demonstrated the need for stress management, a variety of techniques was presented. Each technique was described and a procedure was given for implementation along with a rationale.

The next major topic to be addressed was critical thinking skills and strategies. Three specific skills (metacognition, methodological believing and frame of reference) were presented along with teaching strategies. A number of specific examples were provided.

After the stress management techniques and skills were presented, both were integrated. It was demonstrated that many of the stress management techniques are very similar to
critical thinking and in some instances are in essence critical thinking skills.

Finally, a series of four workshops was offered using stress management to enhance critical thinking. The workshops were both theoretical and practical in nature.

This thesis looked at two different disciplines: Stress Management and Critical Thinking and integrated them. Upon careful examination, a close similarity was found to exist between the cognitive stress management techniques of Beck et al. (1979), Meichenbaum (1977, 1983), Sargent (1974, 1984) and metacognition.

Reflective Statement.

For over 13 years I have been researching and conducting a variety of stress management training programs. Although I had long known about the negative effects of distress upon thinking, I was surprised to discover that very little research addresses the problem of distress upon critical thinking skills.

As I progressed in my course work in the Critical and Creative Thinking Program at the University of Massachusetts at Boston, I began to ponder the question of how one can think critically if one is distressed? All my previous training in stress management, which primarily took place at the Change Agents Training Institute in Hartford, CT, indicated to me that such an attempt was not feasible. It occurred to me, however, that stress management could be used
to enhance critical thinking and this idea became the basis for this thesis.

As I proceeded to write, I myself, began to experience distress. The rigors of writing a Master's thesis, including meeting deadlines, using proper format and writer's block, all took their toll on me. As a result, I found it necessary not only to read about stress management, but also to actually practice some of the techniques as well. At the same time, I found myself using a variety of critical thinking skills, including metacognition and frame of reference. The task of writing a thesis became much more than an academic challenge. It became an actual exercise in using stress management to enhance critical thinking. As I engaged in metacognition, I became aware that I had internalized much of what I had already learned.

My task was to bridge the gap between two different fields of study: stress management and critical thinking and to create a program that could enhance critical thinking skills. Through my research I discovered that a variety of cognitive therapy techniques, used primarily in a therapeutic setting to reduce distress, had remarkable similarity to critical thinking skills. I adapted some of those techniques for use in the classroom and after providing a theoretical framework, created a series of workshops (see Chapter VI) for high school teachers.

It has been my personal experience that it is virtually impossible to think critically when one is distressed.
Therefore, some type of stress management is needed to reduce one's distress in order to think critically.

My hope is that this thesis will not only be of benefit to high school teachers in their teaching of students, but will also provide some assistance to other graduate students who take on the challenge of writing a thesis. While it is not an easy task, it is a worthwhile endeavor.
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Appendix A

Special Place

[Special Instructions: Read slowly with frequent pauses.]

Close your eyes if you like, to help you concentrate. Take a breath and let it out at your own pace. Each time you exhale feel the tension leaving your body. Go to a special place, either real or imaginary. Or you can come with me to my special place — on a mountain top. Notice how it is calm and peaceful and you feel calm and peaceful. See the different colors and shapes of trees and rocks. Hear the quiet rustle of the leaves. Feel the gentle breeze upon your face and the warmth of the sun on your body. And in this special place notice how you feel calm, relaxed and safe. And now I’d like you to silently say your name and feel the feelings of calmness, relaxation and safety. And identify one positive quality that you appreciate about yourself in this special place and silently say your name and the quality. Now, once again, silently say your name, the quality and touch part of your special place and see what you see and hear what you hear in your special place, where you feel peaceful, calm, relaxed and safe. And notice how you feel.

And now, I’d like you to recall a time when you thought about something in a critical manner. Appreciate your thinking and notice how you feel — relaxed, calm and safe. Now identify another positive quality that you appreciate about your self in this special place and silently say your name and the quality and touch part of your special place and see what you see and hear what you hear.

When you’re ready, draw your attention back to the room and bring all the positive feeling and sensations with you. They are yours to have whenever you want them. And when you’re ready, slowly open your eyes, keeping all the wonderful feelings and sensations of your special place.

Adapted from Sargent’s Change Agents Training Institute (1977).
Appendix B

Special Place Associations

1. List some positive feelings you have in your Special Place.

2. Identify some of your positive qualities.

3. Note some objects you touched or saw.

4. Note any sounds you heard.

Adapted from Sargent (1976).

Further Associations of Qualities, Objects, and Feelings from your Special Place.

Describe various objects or feelings from your special place and the associations with each one.

<table>
<thead>
<tr>
<th>OBJECT or FEELING</th>
<th>DESCRIPTION</th>
<th>TEXTURE</th>
<th>QUALITY (that you possess)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. a rock</td>
<td>grey, round</td>
<td>hard</td>
<td>strength</td>
</tr>
</tbody>
</table>

1.

2.
In the above example, a rock is part of my special place. It is grey, round and hard. I am strong and solid like the rock. I associate grey, roundness and hardiness with a rock. When ever I see something that is grey, found or hard, I am reminded that I am strong like a rock.

Adapted from Robbins (1986) and Sargent (1976).
Appendix C

Distress and Thinking

1. List a few times you were distressed.

2. Note the effects of distress upon your thinking.

3. Note the effects of distress upon your perception.

4. Note any automatic responses (habits) to distress.

IMPORTANT - There is a difference between the behavior and the feeling. The feeling is not the same as the behavior.

Adapted from a handout from Sargent's Change Agents Training Institute (1977).
Appendix D

Verbal Reasoning: Problem Solving. Example One

This is the format to use for the problem involving Jack, Phil, Val and Pete. The Problem is to determine which man is the tallest and which is the next to the tallest.

Step 1. Jack is shorter than Phil ...
This can be represented by listing the names in order
Phil
Jack

Step 2. ... but taller than Val.
This says Jack is taller than Val. So Val is added below Jack.

Step 3. Val is shorter than Jack ...
This is already represented in the listing.

Step 4. ... but taller than Pete.
Val is taller than Pete, so Pete is added to the list below Val
Phil
Jack
Val
Pete

Step 5. Which man is tallest and which is the next to the tallest?
The listing shows:
Phil is the tallest.
Jack is the second tallest,

Adapted from Whimbey and Lochhead (1981).
Appendix E

Verbal Reasoning: Problem Solving, Example Two

This is the format for solving problems of which girl speaks the most difficult language.

Step 1. Strategy For Beginning The Problem: The question asks which girl knows the most difficult languages by difficulty. This information is contained in the second sentence of the problem, so the solution starts with the second sentence.

Step 2. If French is easier than German ...
This can be shown by listing the languages in order. The easier language has been arbitrarily put below the harder language.

German
French

Step 3. ... Russian is harder than Swedish. This can be shown in a separate list.

Russian
Swedish

Step 4. ... German is easier than Swedish ...
This information shows how the two lists can be combined. German is placed below Swedish since it is easier.

Russian
Swedish
German
French

Step 5. ... Spanish is easier than French.
This can be added to the list.

Russian
Swedish
German
French
Spanish
Step 6. The list shows that Russian and Swedish are the two most difficult languages. In order to answer the question it is necessary to find who speaks these two languages.

Scanning the first sentence shows that Sandra speaks them. Sandra speaks Russian and Swedish, the most difficult languages.

Adapted from Whimbey and Lochhead (1981).
Appendix F

Analogies

Think aloud as you work on the problem. Explain why each answer is correct or incorrect. Write a sentence that shows a relationship and the reasoning behind the analogy. (Whirmey and Lochhead 1981)

Whirmey and Lochhead offer this format for solving this analogy.

Horse is to animal as _____ is to _____.

a) cow: milk  b) farm: pig  c) oak: wood  d) saddle: stallion

A horse is an animal. It is a type of animal. "Cow: milk." A cow isn't a type of milk ... it gives milk.

Farm: pig. A farm isn't a type of pig.

Oak: wood. Oak is a type of wood. So this forms an analogy.

Saddle: stallion. A Saddle isn't a type of stallion.

Answer C is best. A horse is a type of animal and oak is a type of wood.

Adapted from Whirmey and Lochhead (1981).
Appendix G

Analyzing and Metacognition

(The following paragraphs were created for the purpose of this exercise and do not necessarily reflect the views of the author).

Excerpt #1

There is an unemployment problem in this country and it is caused by immigrants. These people are taking jobs away from Americans in this country. Such programs as Equal Opportunity and Affirmative Action result in reverse discrimination. People born in this country, who are paying taxes should get the first opportunity for employment rather than immigrants.

Excerpt #2

There is an unemployment problem in this country. It is caused by people who don't want to work. Several years ago, Americans weren't afraid of hard work and took pride in what they did. Today people shy away from hard work and have no pride in what they do. The result is people foul up even an easy job. The only people willing to work hard and take pride in what they do are immigrants.
Appendix H

Methodological Believing

The following questions are used to assist one when attempting to engage in methodological believing.

What's interesting or helpful about the view? What are some intriguing features that others might not have noticed? What would you notice if you believed this view? If it were true? In what sense or under what conditions might this idea be true? (Elbow 1986, 275)

If you cannot answer these questions, go back and do more stress reduction techniques. Identify any stress you are experiencing and attempt to reduce it. Then proceed with methodological believing.
Appendix J

Rank Order

There are six possible combinations they can be obtained. They are as follows:

1. orchestra, band, quartet
2. orchestra, quartet, band
3. band quartet, orchestra
4. band, orchestra, quartet
5. quartet, orchestra, band
6. quartet, band, orchestra
Appendix I

Evaluation

In an effort to provide high quality training, please take a few minutes to complete this evaluation form. Thank you.

Workshop Title ___________________________ Date ___

Workshop Presented to ___________________________

Workshop Location ___________________________

Please use the following rating scale: 5=excellent, 4=very good, 3=good, 2=fair, 1=poor. Circle your answers.

1. Speaker's knowledge of subject
   5---4---3---2---1

2. Speaker's presentation skills
   5---4---3---2---1

3. Organization of workshop
   5---4---3---2---1

4. Content of workshop
   5---4---3---2---1

5. Usefulness of exercises and activities.
   5---4---3---2---1

I particularly found useful or enjoyed: ______________

________________________________________________________________________

Suggestions for improvements:

________________________________________________________________________

________________________________________________________________________

Additional comments:
Appendix K

Music

The following selections are available on a cassette recording by LaserLight, Side A:

Mozart. Eine Kleine Nachtmusik.

Mozart. Divertimento.

The following selection is available on a cassette recording by the Lind Institute, entitled "Relax with the Classics" (Largo), Side One:

Pachelbel. Canon in D.

The following selections are available on a cassette recording by CBS Stereo Cassette, Sides One and Two:

Rampal. Japanese Folk Melodies.
Appendix L

Stress Management Techniques

Technique

1. Favorite Activity - focusing on enjoyable activities

2. Special Place - guided imagery with embedded associations, can also be used to promote self esteem

3. Scanning - briefly identifying a feeling, a quality or a behavior

4. Building Associations - developing specific pleasant associations to be used when encountering unpleasant events

5. Anchoring - a specific technique using visual, auditory or kinesthetic cues for building positive associations to various types of experiences

6. Recent Pleasant Experience - identifying any recent experience that produces some type of pleasure

7. "I like how I feel ____ when I ____." (Sargent 1974, 21). This sentence helps to establish the association of pleasant feelings with actions.

The same techniques are listed below by categories.

TECHNIQUES TO PROMOTE SELF ESTEEM:

- Favorite Activity
- Special Place
- Scanning

TECHNIQUES TO CHANGE EMOTIONAL STATES:

- Building Associations
- Anchoring

TECHNIQUES TO MANAGE FEELINGS:

- Recent Pleasant Experience
- Special Place
- Favorite Activity
- "I like how I feel ____ when I ____." (Sargent 1974, 21).
List of Strategies to Promote Critical Thinking

Strategies to Promote METACOGNITION

- Either-Or
- Questioning

Strategies to Promote METHODOLOGICAL BELIEVING

- Debate
- Role Play
- Interpreting (literary text)

Strategies to Promote FRAME OF REFERENCE

- Small Group Work
- Rank Order
- Recent Pleasant Experience
- Special Place
- Favorite Activity
- "I like how I feel _____ when I _____." (Sargent 1974, 21).