Management of Stress-Related Anger in Vocational Rehabilitation Clients: Comparison of Cognitive-Behavioral Therapy and Relaxation Coping Techniques

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(ABSTRACT)

A large body of empirical research has accumulated, suggesting that stress plays a direct and indirect role in both somatic and psychological disorder. Impaired job performances have also been attributed to the deleterious effects of stress. Most of the occupational stress management literature, however, has been focused on non-handicapped populations. Negative reactions to anger and stress have been identified as factors contributing to the poor transition from school to work for handicapped youth. The present study was one of the first efforts to evaluate and compare the efficacy of cognitive-behavioral therapy and relaxation coping techniques for the management of stress-related anger in handicapped work adjustment youth using a controlled group design.

Forty work adjustment students identified as emotionally handicapped or mentally retarded were randomly assigned to a stress inoculation condition, progressive relaxation condition, or a waiting-list control condition. Subjects ranged in age from 16 to 22. Subjects in the two treatment conditions met with a male therapist for 10 one-hour group sessions. Physiological, psychological, and behavioral measures were administered at pre-treatment, post-treatment,

and 4-week follow-up intervals to all subjects. Results of a 3x2x3 multivariate analysis of variance with repeated measures indicated no significant main or interaction effects. It was concluded that the interaction of treatment with time, and treatment with time accounting for disability did not significantly effect the work adjustment students' stress and anger scores for the selected dependent measures. Possible explanations for the absence of significant differences on these measures were presented, and the utility of the study as a whole was discussed.

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Chapter 1

Introduction

Handicapped individuals, as compared to their nonhandicapped peers, have a variety of stressors in their life which may impact on their social and emotional functioning (Cautela & Groden, 1978). This stress is greatly exacerbated during vocational training. Making the transition from school to work is an extremely stressful period for most young people, but particularly so for those who are handicapped. Handicapped youth usually have less work experience than their normal peers (Blazich, 1983), which results in more stress and difficulty when attempting to obtain competitive employment.

Career education, vocational education and special education attempt to accomplish one common goal: the independent functioning of handicapped individuals once they leave the school environment and enter the world of work (Weisgerber, Dahl & Appleby, 1981). The emergence of this collaborated effort has resulted, in large part, from significant pieces of federal and state legislation (Hohenshil, 1982). "Laws that have a direct bearing on the handicapped person's access to vocational training include Public Law 94-142, The Education for All Handicapped Children Act of 1975, Public Law 94-482, The Vocational Education Amendments of 1976, and the Rehabilitation Act of 1973. Each explicitly recognizes the special needs of the handicapped and each addresses an area of concern that is complementary to the other" (Weisgerber et al., 1981, p. 47).

Batsche (1981) indicates that although vocational education services have increased significantly in the past two decades, as of 1978 handicapped students comprised only 2.1% of the more than 16 million individuals served by vocational education. Meers (1981) states that although federal legislation guaranteed the right of handicapped students to enter vocational training programs previously inaccessible to them, vocational teachers found themselves ill prepared to effectively program for their "new" students. As a result, statistical findings continue to reveal that the transition from the protected educational environment to competitive work settings is considerably more difficult for handicapped than nonhandicapped individuals (Conaway, 1981; Fagan, 1981; Meers, 1980). Blazich (1983) contends that handicapped students often lack the skills to benefit from traditional vocational education programs while in school. The high rates of unemployment and underemployment for handicapped individuals has resulted in an economic cost estimated at more than $115 billion per year (Hohenshil, 1982).

Handicapped students who have passed through the educational system without acquiring the necessary job skills may eventually seek the assistance of rehabilitation services. The Vocational Rehabilitation Act of 1973 (especially sections 503 and 504) "has been a powerful mechanism for training, counseling, and placement of the handicapped who are work eligible" (Weisgerber et al., 1981, p. 77).

Rehabilitation services, similar to their vocational and special education counterparts, have two primary objectives. The first is to help the handicapped individual become gainfully employed. The second

is to help them develop an independent living capability (Weisgerber et al., 1981). For many of the handicapped, failure in the world of work is most often not due to a lack of vocational skill per se, but to "inabilities to get along with others, to deal with authority and to acquire socially acceptable work habits" (Hooper, 1980, p. 282). It is often stated that more handicapped individuals get fired from jobs because of their inability to get along with their fellow workers or supervisors than for a lack of specific vocational skills. "Since personality or psychological factors appear to be so important in success, we should be more concerned about evaluating these than manual skills and abilities" (Patterson, 1974, p. 225). Consequently, psychosocial development should assume a critical role in the education and vocational training of handicapped youth. It is essential for successful employment since maladaptive behaviors have been cited as primary reasons for job failure (Kochany & Keller, 1980; Warrenfeltz, Kelly, Salzberg, Beegle, Levy, Adams, and Crouse, 1981; Schumaker, Pederson, Hazel and Meyen, 1983).

Rationale for the Study

Work Adjustment

Work Adjustment relates to the behavioral change process that enables a handicapped individual to function in the role of worker. Work adjustment, whether provided in a school setting, a sheltered workshop environment, or rehabilitation setting, has three primary objectives: "(a) to orient certain clients to the world of work if

they have not had much work experience; (b) to develop prevocational skills; and (c) to change specific work deficiencies and maladaptive behaviors that will deter the individual from securing work" (Brolin, 1982, p. 142). According to Brolin (1982), some of the critical vocational behaviors that often need development or modification are: attendance and punctuality, adjustment to various types of work assignments, adaptability to work environment, reaction to pressure, frustration tolerance, reaction to constructive criticism, communication habits, reaction to supervision, and cooperativeness with supervisor and peer relationships.

Social skills training packages have recently received a significant amount of attention as a mechanism for developing pro-social behavior. A plethora of research based on Social Learning Theory (Bandura, 1977) suggests that social skills training with handicapped children has the potential of facilitating mainstreaming efforts in academic settings (Gresham, 1981).

Occupational social skills training attempts to teach individuals deficient in social skills how to interact competently in a social work environment. Communication skills, assertiveness training, modeling and behavioral rehearsal are frequently associated with social skills training (Bellack & Hersen, 1979; Gresham, 1981). The premise which underlies social skill training is that once the skills are mastered, a level of social adjustment is attained which enhances mainstreaming efforts into academic and work environments. Problems with generalization and maintenance, however, have plagued attempts by those

who have used operant procedures in social skills training (see Keogh & Glover, 1980 and Warrenfeltz et al., 1981, for discussion of the problems inherent in generalization and maintenance).

Psychosocial Stress: A Conceptual Model

The inadequate social and behavioral functioning of handicapped individuals can be conceptualized under the rubric of human stress. Exposure to environmental demands or stressors, in the absence of commensurate coping resources, induces stress reactions that represent impairments to physical health and psychological and behavioral functioning (Lazarus, 1966; Novaco, 1978). Under this theoretical framework, training attrition and dismissal from employment are viewed as a breakdown in performance under stress, rather than from social skills deficits alone. Recent empirical findings (Vaux and Ruggiero, 1983) support the hypothesis that "stressful life change is associated with certain kinds of criminal and delinquent behavior" (p. 177). Vaux and Ruggiero proposed that stress serves as an impetus to anxiety and psychological discomfort, which in turn leads to palliative modes of coping. In addition, stress may also serve as an impetus to anger and to a reduced level of social attentiveness. Most models of stress (Lazarus, 1966; Novaco, 1978) and much empirical research (e.g., Frankenhaeuser, 1977; Holroyd, Appel, & Andrasik, 1983; Holmes, 1984) associate stress with affective states of increased arousal, often experienced as anxiety, discomfort or anger.

Psychological approaches to stress are predominantly concerned with the interaction between person and environment and concentrate on the

intervening factors that mediate the relationship between stressors and stress outcomes (Novaco, 1978). "Any intervention designed to influence human behavior may focus on person variables, situational variables, or both" (Akridge & Means, 1982). The transactional model of stress emphasizes the cognitive appraisals and coping responses of individuals as a means of mediating between stressors and their debilitating effects (Lazarus, 1966).

The stress framework suggests that socially unacceptable work habits result from inadequate coping skills. Novaco (1977a) further notes that "the self-regulation of anger is an important facet of the ability to cope with stress" (p. 606), since an heightened level of arousal "can be labeled as anger rather than anxiety, depending upon the particular situational and personal cognitive characteristics involved" (Vaux & Ruggiero, 1983, p. 180). Handicapped individuals who experience difficulty with their anger tend to lack the necessary psychological resources for coping and are therefore prone to react negatively whenever placed in a provocation situation. For example, "When asked to complete a task by a supervisor, many youth react with a 'Who are you to boss me around?' attitude" (Hooper, 1980, p. 383). This behavior seriously impedes performance in vocational training and on the job.

Anger

Anger is viewed as a reaction to stress (Novaco, 1975). That is, the arousal of anger is one kind of response that occurs with exposure to environmental demands. Criticism from a supervisor is an example of

an environmental demand, which may or may not result in the arousal of anger. The individual's coping style mediates between the demand (or stressor) and the actual response. It has been suggested, for example, that displaced anger can be one cause of tardiness and absenteeism (Alschuler & Alschuler, 1984). Although anger can seriously interfere with job efficiency, the study of anger in its own right is relatively new. The role of anger has been studied primarily as it relates to overt aggression (Averill, 1983). However, anger is not the same as aggression (Rothenberg, 1971; Bandura, 1973; Novaco, 1975; Moon, 1982). As MacNeilage and Adams (1982) contend, "Everyone feels anger, but not everyone expresses it overtly" (p. 154). Averill (1983) also states that "most people report becoming mildly to moderately angry anywhere from several times a day to several times a week" (p. 1146). The study of anger, as viewed from the perspective of psychological stress, has significant implications in the psychosocial development of handicapped individuals as they seek to obtain and maintain employment.

STATEMENT OF THE PROBLEM

Within the last decade the literature on occupational stress has become voluminous. A large body of empirical research has accumulated, suggesting that stress plays a direct or indirect role in both somatic and psychological disorder. Impaired job performances have also been attributed to the deleterious effects of stress. Most of the occupational stress management literature, however, has been focused on non-handicapped populations. Social skills training has been the primary mechanism for enhancing the social adjustment of handicapped

individuals. However, if the individual has the skills in his or her repertoire and the performance is blocked because of anxiety, then an approach directed at anxiety/stress reduction is in order (Arkowitz, 1981; Meichenbaum & Cameron, 1983). The issue of employing stress reduction procedures to enhance the job performance of handicapped youth making the transition from school to work has not been addressed in the literature.

In addition, research in the area of self-control and the management of stress-related anger has concentrated on the reduction of angry and aggressive behaviors of residential, delinquent adolescents (Feindler, 1979; Warrenfeltz et al., 1981; Conaway, 1982) and normal adults with chronic anger problems (Novaco, 1975). There are virtually no published research studies on the efficacy of these techniques with handicapped individuals in vocational settings. Since psychological stress and the arousal of anger have been identified as contributing to impaired job performance, the question becomes, "What is an effective way to treat stress-related anger in handicapped youth in vocational settings?" The problem to be addressed in this exploratory study is whether the coping strategies of handicapped individuals in a work environment can be significantly enhanced by employing stress reduction procedures.

PURPOSE OF THE STUDY

As stated earlier, the management of stress and stress-related anger are relatively unstudied in handicapped youth in vocational settings. The purpose of this exploratory study was (a) to adapt

progressive relaxation training and cognitive-behavioral therapy procedures to group formats with work adjustment clients in a comprehensive vocational rehabilitation setting, (b) to evaluate the effectiveness of these treatments as compared with a control condition, and (c) to determine whether cognitive-behavioral therapy (including relaxation training) was more effective than relaxation training alone.

LIMITATIONS OF THE STUDY

The subjects used in this study were voluntary pre-vocational (work adjustment) clients of a comprehensive vocational rehabilitation center in Virginia. Consequently, the results of this study are generalizable only to similar groups.

SIGNIFICANCE OF THE STUDY

Negative reactions to anger and stress have been identified as contributing factors to the poor transition from school to work for handicapped youth. The approach of this investigation was different from the current social skills training strategies being employed with handicapped individuals. This research study was designed to evaluate the effectiveness of decreasing the level of stress and increasing the capacity for self-control for handicapped students in pre-vocational training. The findings of the study lend tentative support to the notion that the reduction of psychological stress, and subsequent anger reactions, will ease the transition from school to work for handicapped individuals. The results of this study, although exploratory in nature, contribute to the literature regarding strategies designed to manage stress-related anger in the work setting.

Furthermore, research from this study should offer ideas to educators and mental health practitioners who are interested in providing effective interventions with handicapped populations identified as being at-risk of job failure. Given the prevalence of job related problems experienced by handicapped youth entering the job market, it is anticipated that this exploratory study will provide some initial impetus for additional clinical trials and experimental research in this area.

ORGANIZATION OF THE STUDY

The purpose, significance and scope of the study have been defined in Chapter One. Chapter Two will consist of the extant literature, both general and specific, that pertains to stress/anger and their control. Chapter Three will describe the research methodology of the study and Chapter Four will include the research analysis and the criteria for evaluation. Chapter Five will contain the discussion, conclusions and recommendations for future research.

DEFINITION OF TERMS

In the context of the current study, the following definitions apply:

Anger is defined as an intense emotional response to frustration or provocation which is characterized by heightened autonomic arousal and cognitive identification of the arousal as anger (Novaco, 1975).

Anger management procedures intervene at the cognitive, somatic, and behavioral levels to promote adaptive coping with provocation (Novaco, 1978).

Anger problems are defined in terms of a set of parameters: frequency, intensity, duration, mode of expression, and its effects on health, performance, and relationships. The more that anger occurs on these parameters, the more reliably the person can be viewed as having an anger problem (Novaco, 1980).

Anxiety is characterized by subjective feelings of tension, apprehension, nervousness, and worry, and by activation or arousal of the autonomic nervous system (Spielberger et al., 1983).

Autogenic training is a system of psychosomatic self-regulation. An individual learns to focus his or her concentration on visual, auditory, and somatic imagery in an effort to induce specific physiological changes, such as muscle relaxation (Norris & Fahrion, 1984).

Cognition is the behavior involved in knowing, which occurs as the result of acquiring a store of information of the self, of the external environment, and of their interaction in the pursuit of behavioral goals (Hamilton, 1982).

Coping is defined as the process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of the person (Lazarus and Folkman, 1984b). Coping refers to both intrapsychic and behavioral efforts to manage or tolerate stress (Holroyd, Appel, & Andrasik, 1983).

Occupational stress is defined as a state of imbalance between environmental demands found within the confines of an occupational

setting and the response capabilities of the person or system to cope with these demands.

Progressive relaxation training seeks to reduce the autonomic arousal component of stress indirectly by altering one of its manifestations - namely, skeletal muscle tension (Bernstein & Given, 1984).

Stress can be viewed as a state of imbalance between environmental demands and the response capabilities of the person or system to cope with these demands (Lazarus, 1966; Novaco, 1975).

Stress inoculation refers to a general treatment paradigm which includes educational, skills training, and application phases (Meichenbaum and Cameron, 1983).

Stressors are aversive events that exert demands for adaptation (Novaco, 1978).

Chapter 2

REVIEW OF THE LITERATURE

This chapter reviews the theoretical framework and research on stress, and more specifically, conceptualizes anger as an adverse reaction to stress. This is a basic assumption of this study. From the above theoretical and empirical findings, the treatment focus will be established.

Historical Perspective

There has been a considerable amount of confusion regarding the definition of stress in the literature. Walter Cannon (1939), a pioneer in this area, originally used the term "stress" in a physiological sense, while conducting research on the "fight or flight" response. Mason (1975) reports that the term was used in a rather casual manner and reflected the conventional use of the term during that period. Hans Selye (1956), who more than anyone else popularized the concept of stress, furthered Cannon's notions of the physiological stress response. Selye (1936) postulated a theory that explained stress as a reaction or "syndrome produced by diverse nocuous agents" (Selye, 1982, p. 10). The reaction subsequently became known as the general adaptation syndrome (GAS) (Selye, 1946).

Selye initially conceptualized the term "stress" in "the conventional sense of stimuli, evocative agents, or outside forces

acting on the organism" (Mason, 1975, p. 9). He continued to use the term "stress" to reflect stimulus properties up until 1950. Selye and other researchers found that, regardless of the environmental stimulus, a generalized physiological response was activated within the organism (GAS). In 1950 Selye proposed that the term "stress" be defined to denote "a condition within the organism in response to evocative agents" (as cited by Mason, 1975, p. 9). Selye further proposed that the environmental stimuli or evocative agents be termed "stressors". Mason (1975) reports that the underlying reasons for Selye's decision to change the definition of "stress" from outside force to bodily response are not fully clear, but most likely reflected his emphasis on the nonspecific (or common) response of the body to any demand made upon it. Selye continued to believe that stress was fundamentally a physiological response. Mason (1975) contends, however, that Selye had later entertained the possibility of defining "stress" as the interaction between stimulus and response, in the sense that the term is used in physics or engineering (i.e., the interaction between a force and the resistance opposed to it).

The impact of Selye's research and provocative concepts has had an enormously stimulating effect on research in many areas of medicine and biology in general, and on the developing psychosomatic field in particular (Mason, 1975). Mason (1975), after reviewing the historical developments within the stress field, stated that research has generally proceeded in two largely separate areas, with "physiologists

primarily focusing upon physical and humoral stimuli, while behavioral scientists have focused upon psychosocial stimuli" (p. 11). He further contends that the popularity of stress concepts has gradually diminished in the physiological field, while the overwhelming bulk of interest and research effort is concerned with psychological stress. That is, with the impact of psychosocial influences upon the individual. In contrast to the biological or physiological point of view (Selye, 1936, 1946, 1956, 1982), the focus of the present study will be at the psychological level.

Theories of Psychological Stress

As is true of the stress field in general, there is currently no consensus regarding the definition of psychological stress. Three models or theories of stress, however, have been conceptualized and generally reflect the major areas of research in this area: stimulus oriented theories, response oriented theories and interactional theories.

Stimulus Oriented Theories

Stimulus oriented theories view stress in environmental terms as an event presumed to require an adaptive response (Coyne & Holroyd, 1982; Derogatis, 1982). According to this approach, those aspects of the environment that are demanding for the person (i.e., stressors) impose stress. Derogatis (1982) points out that stimulus theorists often use an engineering analogy to reflect their model for human stress. "The engineering model essentially states that each individual has an innate capacity to withstand environmental stressors (something akin to

coefficient of tolerance); when the cumulative stress experienced is greater than that value, the individual begins to undergo a deterioration in function -- the reaction to stress. Models based on this reasoning focus measurement efforts on the characteristics of the individual's environment (e.g., life events, time demands, external and internal noxious conditions) and attempt to utilize instruments that will accurately reflect cumulative environmental stress" (p. 272).

The assessment of stress using life events scales has been the approach most frequently employed within the stimulus oriented framework. Although life events research can be traced back to sources from the first half of the twentieth century (Perkins, 1982), impetus for the current line of thinking appears to have been derived directly from Selye's conceptualization of the general adaptation syndrome. The underlying assumption has been that life change events require adaptive efforts by the individual which lower bodily resistance to a wide range of disorders (Perkins, 1982; Coyne & Holroyd, 1982). Furthermore, it is also assumed that the effects of life events are cumulative and increase the probability of subsequent illness. Adverse reactions are assumed to result from both positive and negative changes.

Holmes and Rahe are the best known researchers in the area of life events assessment. They developed the Social Readjustment Rating Scale (Holmes & Rahe, 1967) which has been used to study the relationship between the experience of stress, as assessed by life events, and a host of adverse physical and psychological conditions (Perkins, 1982). The empirical literature on stressful life events has grown

considerably during the past twenty years. Examination of the massive amount of research evidence leaves little doubt that a significant relationship exists between the accumulation of life events and the risk of subsequent physical and psychological disorders (Perkins, 1982; Coyne & Holroyd, 1982; Dohrenwend & Dohrenwend, 1982). The correlates of stressful life events are not limited to any particular type of disorder. Life events have been shown to be related to a variety of somatic and psychological disorders, as well as to academic and job performance deficits (Dohrenwend & Dohrenwend, 1982; Perkins, 1982).

The reactions of individuals to job related stressors, and their effect on performance and productivity, have received a great deal of attention within the occupational stress literature. The financial costs of decreased productivity due to occupational stress are reported to be enormous (Sweetland, 1979; Holt, 1982), with direct costs of executive stress alone at nearly $20 billion per year (Beech, Burns, & Sheffield, 1982). Not only can stress directly result in decreased work output and reduced quality, but other manifestations such as discontent, absenteeism, and high turnover can result. Job related stress would appear to be magnified for handicapped individuals who traditionally have had more difficulty making the transition from school to work than their nonhandicapped peers (Conaway, 1981; Meers, 1980).

The stimulus oriented model has provided a useful framework for analysis of the relationship between stress and job performance. The identification and assessment of negative environmental factors or

stressors has been a necessary prerequisite in this line of research. Cooper and Marshall (1976) conclude from their critical review of the stress research literature that there are a large number of possible environmental sources of stress at work. They have provided a model of stress that classifies the sources of work related stress into five general categories: factors intrinsic to a particular job, role in organization, career development, relationships at work, and organizational structure and climate. In addition to the above factors, Gowler and Legge (1980) have identified evaluative practices as potential stressors in occupational settings. They contend that performance appraisal procedures have been noted to generate stress, anxiety, frustration and aggression in those concerned. As noted in an earlier section, the inability to get along with supervisors and accept constructive criticism has often been cited as primary reasons for job failure (Kochany & Keller, 1980; Hooper, 1980). The significance of evaluative practices as potential stressors for handicapped workers seems clear.

A number of empirical research studies have looked at the relationship between stimulus events (e.g., life-change events, role overload, role conflict, role ambiguity) and job performance (Clinard & Golden, 1973; Cooper & Marshall, 1976; Cohen, 1980; Martinko & Gardner, 1982; Holt, 1982; Grimm & Yarnold, 1984; Jamal, 1984; Cooper & Melhuish, 1984). Clinard and Golden (1973) extended the work of Holmes and Rahe to include an investigation of relationships between life changes and levels of task performance among graduate and undergraduate

students. They concluded that the observed correlations tended "to confirm the hypothesis that experienced life changes, both individually and cumulatively, are significantly associated with academic and job-related performance" (p. 393). They note, however, that some of the correlations were not in the expected direction, since greater life changes were associated with positive outcomes (i.e., promotions and raises).

The underlying assumption of most of the job performance research (that define stress as environmental stressors) is based on the Yerkes-Dodson law (1908), a theoretical model which suggests an inverted U-shaped or curvilinear relationship between stress and performance (Sweetland, 1979; Mandler, 1982; Jamal, 1984). However, a review of the job stress and job performance literature led Jamal (1984) to conclude that the relationship between stress and performance is far from conclusive. He examined the relationship between job stress and performance among nurses. Job stressors assessed included role ambiguity, role overload, role conflict, and resource inadequacy. Contrary to the results hypothesized from the Yerkes-Dodson law (1908), Jamal found that "the relationship between job stress and performance tends to be a negative linear one, provided stress is operationalized in terms of perceptions of stressors such as role conflict, overload, and resource inadequacy" (p. 15). Jamal's empirical findings, while contrary to the Yerkes-Dodson law, lend support for Selye's general adaptation syndrome. Stress (or stressors) would be expected to

require adaptive efforts by the person, which would then result in lower performance over time.

There are virtually no empirical studies regarding stress and job performance in the literature that directly pertain to handicapped individuals. Consequently, the implications of the above research findings for handicapped individuals in occupational settings are far from clear at this time. However, additional studies have examined the effects of stress on social behavior. Research findings in this area would seem to have a direct bearing on the adjustment of mentally and emotionally handicapped individuals within the work environment. Jamal (1984) found that job stress is positively related to withdrawal behavior and in keeping with the empirical literature. "The higher the job stress, the more unpleasant the work situation becomes, and the more individuals try to escape from it" (p. 16). The research suggests that individuals may attempt to avoid job stress by being late, being absent, or quitting.

Cohen (1980), in a critical review of the research on stress and social behavior, concluded that exposure to unpredictable and uncontrollable stress is followed by a decreased sensitivity to others. "This includes a decrease in helping, a decrease in the recognition of individual differences, and an increase in aggression" (p. 95). Maladaptive behaviors such as these have been cited as primary reasons for job failure (Kochany & Keller, 1980; Warrenfeltz et al., 1981; Schumaker, Pederson, Hazel and Meyen, 1983). It appears, then, that for handicapped individuals an insensitivity to social cues can be

explained as a performance deficit based on stress theory, rather than solely from a social skills deficit model.

Studies of the relationship between stimulus events (e.g., life change) and performance (e.g., physical and mental health, job efficiency, etc.) continue to proliferate, but it appears that earlier estimates of the magnitude of the relationship were considerably inflated (Coyne & Holroyd, 1982). A position can no longer be maintained that there exists some specific law relating stress and efficiency (Mandler, 1982; Perkins, 1982; Jamal, 1984). Understanding the relation between efficiency and stress requires an analysis of specific stressors and the individual's perception of the stimulus event (Lazarus, 1966; Mason, 1975; Cooper & Marshall, 1976; Mandler, 1982; Coyne & Holroyd, 1982; Perkins, 1982; Abush & Burkhead, 1984). From a practical standpoint, the stimulus oriented approach fails to provide clinicians (both medical and psychological) with a viable approach for helping the client (Coyne & Holroyd, 1982). Life events, for example, may be difficult or impossible to avoid. Moreover, job stressors, such as evaluative practices, are an intricate part of the work environment.

In addition to the above conceptual issues, there are many methodological problems that limit the generalizability and interpretation of stimulus oriented research (Perkins, 1982; Cooper & Marshall, 1976). Cooper and Marshall (1976), in a comprehensive review of the stress research literature linking environmental and individual sources of stress to physical and mental disease or illness, cited some

of the most common methodological shortcomings. First, most of the studies rely heavily on correlational data for their conclusions. Inferences about causality are therefore limited. Moreover, correlational analysis also fails to point out the role of mediating variables. Second, there is often confusion between dependent and independent variables which only serves to contribute to the definitional confusion in this area. The third problem relates to researchers who attempt to generalize from a small highly specific sample.

Response Oriented Theories

Unlike stimulus oriented theories, response oriented theory defines stress as the response of the individual to the events of the environment. "In particular, the pattern and amplitude of emotional responses (at least at the psychological level) are used to evaluate presumptive levels of stress" (Derogatis, 1982, p. 272). Theorists owe much in their position to the work of Selye (1956), who equated stress with the general adaptation syndrome, a coordinated pattern of physiological responses that are mobilized when demands are exerted on the organism.

Derogatis (1982) notes that response oriented models tend to direct psychological assessment toward measures of disorganized functioning. Most of the instruments used by these theorists reflect general psychological adjustment and have been multi-dimensional in nature. However, unidimensional instruments (e.g., anxiety) have also figured prominently. Psychological response measures reported within the

occupational stress literature include such variables as job dissatisfaction, boredom, anxiety, occupational self-esteem, and tension due to conflict (Holt, 1982).

Although the response oriented approach to stress begins with the individual's mobilization (or adaptation) instead of with a stimulus event, it shares with the stimulus approach an inattention to individual differences (Coyne & Holroyd, 1982). Mason (1975) states that there is no single response or set of responses that is invariably elicited when adaptive resources are taxed. Moreover, "this approach is also further complicated by the fact that response topography can change markedly over time with persistence or repetition of the same stimulus conditions ..." (p. 33).

Interactional Oriented Theories

Within the theoretically complex field of stress research, a transactional model of stress appears to be emerging as a broad integrative framework (Cameron & Meichenbaum, 1982). Lazarus and his colleagues have been largely responsible for the development of this model (Lazarus, 1966; Lazarus, Averill & Option, 1970; Lazarus, 1982; Holroyd & Lazarus, 1982), although it also reflects the general conceptual approach of many in the psychological stress field (Mason, 1975). As Derogatis (1982) points out, "Interactionist theorists are critical of the unelaborated stimulus and response theories in that both these theories dismiss the important variable of person in the stress equation and, with it, the large number of important mediating

characteristics that form the basis for individual differences" (p. 272).

Theorists and researchers holding an interactional point of view believe that stressful life events and other psychosocial stressors do not have an invariant or universal impact on performance efficiency or physical and mental health (Stensrud & Stensrud, 1983; Gentry & Kobasa, 1984). The transactional perspective emphasizes cognitive appraisals and coping responses as two major processes that mediate between stressors and the stress response, and which ultimately accounts for individual differences.

A stressful transaction begins with a primary cognitive appraisal that a situation requires an effective response to avoid or reduce physical or psychological harm and a secondary appraisal that no completely effective response is immediately available (i.e., ineffective coping strategies). In other words, psychological stress is conceptualized here in terms of person-environment transactions that tax or exceed the resources of the person (Holroyd & Lazarus, 1982). Derogatis (1982) notes that theorists who advocate a transactional approach believe that the individual's perceptual, cognitive, and emotional mediating processes actively affect the demand characteristics of the environment so that the status of the system is constantly changing. "For these investigators, the ongoing relationship between the person's adaptive mechanisms and the stimulus properties of the environment is central to the definition of stress" (Derogatis, 1982, p. 273).

Cognitive Appraisal in Stress and Coping

According to Lazarus and his colleagues (Lazarus, 1966; Holroyd & Lazarus, 1982; Coyne & Holroyd, 1982; Lazarus & DeLongis, 1983; Lazarus & Folkman, 1984a), psychological stress requires a judgment that environmental and/or internal demands exceed the individual's capability for managing them. "This judgment and the individual's efforts to manage and shape the stress experience are conceptualized in terms of two interacting processes: appraisal and coping" (Holroyd & Lazarus, 1982, p. 22).

Cognitive appraisal refers to the process of evaluating environmental stimuli or stressors to determine whether they are potential sources of "harm" (including loss), "threat", or "challenge". These three kinds of primary appraisal are encompassed by psychological stress and affect how a person copes (Lazarus & Folkman, 1984a). Lazarus and Folkman (1984a) state that "harm is damaged well-being as defined by a person's values and commitments" (p. 290). The harm can be temporary, as perhaps in a poor school or job evaluation, or long-term, as in a life-threatening illness. Coping with harm-loss usually refers to the judgment that damage has already occurred. The appraisal of threat refers to the anticipation or potential for harm and often involves a high degree of ambiguity and uncertainty due to a lack of relevant information. Challenge involves the judgment that a transaction contains the potential for harm and gain and, like threat, is also oriented toward the future. Holroyd and Lazarus (1982) contend that the appraisal of challenge also involves the judgment that this

outcome can be influenced by the individual. Lazarus and Folkman (1984a) have suggested that people "may cope better when challenged than when threatened, because they are less conflicted and suffer less from such emotions as anxiety, anger, guilt or jealousy" (p. 291).

Coping, as defined in the transactional model advocated by Lazarus (1966), is "the process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984a, p. 283). How a person copes with any stressful encounter determines his or her emotional response. Coping responses are influenced by a number of factors which include: previous experiences in similar situations, generalized beliefs about the self and the environment, and the availability of personal (e.g., problem-solving skills) and environmental (e.g., social support) resources (Holroyd & Lazarus, 1982). In addition, how coping will be carried out will also depend on whether the encounter is approached with a sense of challenge or threat (Lazarus & Folkman, 1984a).

Coping has been construed as involving two main functions (Coyne & Holroyd, 1982; Lazarus & Holroyd, 1982; Lazarus & DeLongis, 1983; Lazarus & Folkman, 1984a), which reflect both the cognitive and behavioral efforts of the individual. Problem-focused coping involves efforts to deal with the sources of stress that harm, threaten, or challenge. Problem-oriented coping attempts to eliminate environmental demands by changing one's own problem-maintaining behavior or by changing environmental conditions (Coyne & Holroyd, 1982). Emotion-focused coping refers to "efforts directed at regulating the emotion

itself, whether the focus of such regulation is behavior and expression, physiological disturbance, subjective distress, or all three" (Lazarus & Folkman, 1984a, p. 284). Emotion-focused coping changes, through realistic or defensive reappraisal, the way the interaction is perceived and therefore the emotional reaction to it (Lazarus & DeLongis, 1983).

Emotional Arousal and Psychological Stress

Lazarus (1982) has argued that emotion, similar to psychological stress, reflects a constantly changing person-environment relationship. Cognitive appraisal is again viewed as a necessary precondition of emotion. The attribution theory of emotion developed by Schachter and Singer (1962) provided a great deal of stimulation for the advancement of this position. They suggested that an emotional state may be considered a function of a state of physiological arousal and of cognition appropriate to this state of arousal. Their initial hypothesis suggested that given a state of physiological arousal for which the individual has no adequate explanation, cognitive factors can lead the individual to describe his or her feelings with any number of emotional labels. For example, heightened arousal can be labeled as anger rather than anxiety, depending upon the particular situational and personal cognitive characteristics involved (Vaux & Ruggiero, 1983).

A number of studies relate stress to one or more physiological variables associated with the activation of the sympathetic nervous system and the "fight-or-flight" response. Arousal (or activation) is

a central construct in stress research (Weick, 1984). Different types of stressors, physical and psychosocial stimulation, as well as demanding tasks are all assumed to contribute to an increase of the individual's arousal level. The harmful effects of frequently elevated psychophysiological arousal have been frequently noted (Selye, 1946, 1982; Frankenhaeuser, 1977; Lundberg, 1982). Frankenhaeuser (1977), who has reported data from ongoing research projects concerned with acute psychophysiological and neuroendocrine stress reactions characteristic of work in advanced industrialized countries, asserts that among neuroendocrine reactions, catecholamine secretion (or adrenaline and noradrenaline) is a "sensitive indicator of psychological arousal, reflecting both the effort that a person invests in what he is doing and the intensity of his feelings" (Frankenhaeuser, 1977, p. 314). Relevant to the topic of arousal and emotion, and in keeping within the cognitive framework, Frankenhaeuser concludes that: "the impact of a (stressful) stimulus, as assessed by catecholamine excretion, is not determined by its physical properties as such, but by the individual's cognitive appraisal of its meaning and the context in which the stimulus is embedded" (p. 314).

The effects of arousal on performance have been previously described and are generally associated with the Yerkes-Dodson Law. It is generally believed that there is an inverted-U relationship between arousal and the efficiency of performance with increasing levels of arousal, first improving and then impairing performance (Cohen, 1980; Weik, 1984). As arousal increases, attention to cues narrows and

becomes more selective -- the cue utilization hypothesis (Easterbrook, 1959). This editing is likely to be detrimental to performance because the remaining attention would probably be less than that required to process task-relevant cues (Cohen, 1980; Weik, 1984). Moreover, an inability to properly attend to relevant cues would be expected to have a detrimental effect on an individual's ability to cope, since coping is a cognitive process. Hamilton (1982) views the direction of physical arousal as being governed by the individual's ongoing cognitive processes. He further proposes that the increased arousal level adds an information processing load to the cognitive processing system, which acts to impair performance.

Coping and Psychological Mediating Factors

Lazarus and Folkman (1984a) believe that ambiguity, defined as a lack of clarity in one's environment, is a crucial situational determinant of appraisal and coping. An individual's ability to evaluate (appraise) the level of potential harm may be impaired by ambiguity. Ambiguity also "makes it difficult to decide whether anything can be done to evade, master, or even tolerate the harm, or to decide on the forms of action that are likely to have a felicitous outcome" (p. 293). Lazarus and Folkman (1984a) contend that in the absence of clear information (ambiguity), the individual is required to make inferences based on personality dispositions (e.g., trait anxiety), beliefs, and previous experience in an attempt to provide clarity to one's environment.

Social learning theory and the work of Rotter (1966) and Bandura (1977) are particularly relevant to the understanding of how an individual appraises a stressful situation (e.g., threat), and then attempts to cope with it. The concept of locus of control (Rotter, 1966) refers to the degree to which individuals perceive that they have control over their environment. Some people believe that they control desired or undesired outcomes (internal locus of control), whereas others believe that such outcomes are the result of fate, luck, and powerful others (Rotter, 1966).

A number of studies have examined the relationship between life stress and measures of psychological disorder, incorporating the construct locus of control as a moderating variable. Johnson and Sarason (1978), for example, examined the relationship between life stress and measures of depression and anxiety as a function of locus of control orientation. They hypothesized that life stress would be related to the dependent measures only with subjects displaying an external locus of control orientation. The results of this study were supportive of the hypothesis and suggested that the effects of life stress may be mediated by the degree to which individuals perceive themselves as having personal control over events. An individual who experiences high levels of change and feels a lack of control over events seems to be the most susceptible to the effects of life stress.

In another study, Nelson and Cohen (1983) were unable to replicate the findings of Johnson and Sarason (1978), even though the present study sampled an equivalent undergraduate population and employed

identical measures. Nelson and Cohen (1983) found that negative life events were positively related to measures of psychological disorder. However, there was no evidence for the moderating effects of locus of control beliefs.

Averill (1973) asserts that although there is a general tendency to assume that personal control over an impending harm will help to reduce stress reactions, a critical review of the experimental research indicates that this assumption is not always warranted. He concludes that "the only general statement which can be made with confidence is that the stress-inducing or stress-reducing properties of personal control depend upon the meaning of the control response for the individual; and what lends a response meaning is largely the context in which it is embedded" (pp. 300-301). Averill further distinguishes three main types of personal control: behavioral (direct action on the environment), cognitive (the interpretation of events), and decisional (having a choice among alternative courses of actions). Each type of control is conceptualized by Averill as relating to stress in a complex fashion.

Self-Efficacy and Psychological Stress

According to Lazarus and DeLongis (1983), theorists today tend to break down the concept of personal control into two components, which are reflective of Bandura's self-efficacy theory. Bandura (1977) distinguishes between efficacy expectations and outcome expectations, and defines them as follows:

> An outcome expectancy is defined as a person's estimate that a given behavior will lead to certain outcomes. An efficacy expectation is the conviction that one can

> successfully execute the behavior required to produce the outcomes. Outcome and efficacy expectations are differentiated, because individuals can believe that a particular course of action will produce certain outcomes, but if they entertain serious doubts about whether they can perform the necessary activities such information does not influence their behavior ... In this conceptual system, expectations of personal mastery affect both initiation and persistence of coping behavior (p. 193).

Bandura (1977) postulates that the different psychological procedures employed in the process of behavioral change are derived from a common cognitive mechanism. The various psychological methods serve as a means of creating and strengthening expectations of personal efficacy. Moreover, Bandura suggests that cognitive events are induced and modified most readily by experience of mastery arising from effective performance. Bandura (1977) refutes the notion that locus of control is analogous to self-efficacy, even though they are often treated in the literature as such. He contends that locus of control, which is primarily concerned with causal beliefs about action-outcome contingencies, can have a variety of effects on self-efficacy. For example, "people who regard outcomes as personally determined but who lack the requisite skills would experience low self-efficacy and view activities with a sense of futility" (p. 204).

Guidubaldi (1982) suggests that handicapped individuals may be particularly susceptible to low self-efficacy perceptions, to the extent that they may refuse to give effort to tasks that are unrelated to their particular area of deficit. Guidubaldi (1982) also contends that this generalized lack of effort is frequently labelled learned

helplessness, "a familiar obstacle to academic and vocational development" (p. 74).

Maier and Seligman (1976), who originally advanced the theory of learned helplessness, assume that as a result of being subjected to uncontrollable aversive events, individuals acquire expectancies that actions do not affect outcomes. Individuals who come to expect future responding to be futile will no longer initiate behavior in situations where outcomes are in fact controllable by individual actions or responses. Bandura (1977) points out the conceptual distinction between efficacy and outcome expectations in the following manner:

> People can give up trying because they lack a sense of efficacy in achieving the required behavior, or they may be assured of their capabilities but give up trying because they expect their behavior to have no effect on an unresponsive environment or to be consistently punished. These two separable expectancy sources of futility have quite different antecedents and remedial implications (pp. 204-205).

Bandura (1977) contends that to remediate efficacy-based futility it is necessary to develop competencies and expectations of personal effectiveness. On the other hand, to alter outcome-based futility requires that changes be made in environmental contingencies that "restore the instrumental value of the competencies that people already possess" (p. 205).

In Bandura's social learning theory (1977), expectations of personal efficacy are based on four major sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states (see Figure 2.1). Performance accomplishments, according to Bandura, is an especially influential

FIGURE 2.1

EFFICACY EXPECTATIONS(1)

Source	Mode of Induction
PERFORMANCE ACCOMPLISHMENTS	PARTICIPANT MODELING PERFORMANCE DESENSITIZATION PERFORMANCE EXPOSURE SELF-INSTRUCTED PERFORMANCE
VICARIOUS EXPERIENCE	LIVE MODELING SYMBOLIC MODELING
VERBAL PERSUASION	SUGGESTION EXHORTATION SELF-INSTRUCTION INTERPRETIVE TREATMENTS
EMOTIONAL AROUSAL	ATTRIBUTION RELAXATION, BIOFEEDBACK SYMBOLIC DESENSITIZATION SYMBOLIC EXPOSURE

(1)This figure is taken directly from Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84(2), p. 195.

source of efficacy information because it is based on personal mastery experiences. "Having a serviceable coping skill at one's disposal undoubtedly contributes to one's sense of personal efficacy" (p. 196). Vicarious experience, such as modeling, has also been argued by Bandura as a source of self-efficacy. Observing others perform threatening activities without adverse consequences demonstrates that they too can eventually succeed through perseverance. People can also be led, through verbal persuasion, into believing that they can cope successfully with what has proved stressful to them in the past. Finally, Bandura contends that individuals are more likely to expect success when they are not overwhelmed by aversive emotional arousal than if they are tense and physically agitated. As Schachter and Singer (1962) have shown, the same source of physiological arousal may be interpreted differently in ambiguous situations depending on the appraisal of the instigating conditions. Bandura argues that of the four major sources of efficacy information, expectations of personal efficacy are altered most readily by personal mastery experiences arising from performance accomplishments.

Support for Bandura's self-efficacy theory was originally obtained by him and his colleagues in experimental studies on snake-phobic subjects (Bandura, 1977). Bandura and associates developed self-report ratings of self-efficacy which were found to be significant predictors of behavior change for varying behavioral treatments. However, Eastman and Marzillier (1984), in a recent review of Bandura's self-efficacy theory, discuss theoretical and methodological difficulties associated

with it. They contend that efficacy expectations, as defined by Bandura (1977), include within them expectations of outcome, and as a result could not be regarded as conceptually distinct. Eastman and Marzillier also argue that Bandura's method of assessing self-efficacy raises a number of questions; first and foremost is how the assessment scale relates to the theoretical construct of self-efficacy. Eastman and Marzillier conclude from their review that although the concept of self-efficacy may not be as clear cut and all-encompassing as Bandura suggests, it has focused attention on cognitive determinants of therapeutic change which was previously lacking.

In an exploratory study, Witmer and his colleagues (1983) investigated a number of self-reported psychosocial and cognitive characteristics that might affect the processes of cognitive appraisal and coping. Although the study has several limitations due to sampling and psychometric considerations, self-esteem emerged as the most important factor in discriminating between good and poor copers. The self-esteem factor as incorporated in the present study was felt to reflect two interrelated aspects: self-efficacy and self-worth. Witmer et al. suggest that the self-efficacy component of the self-esteem construct lends support to Bandura's (1977) concept of self-efficacy as central to one's ability to produce and regulate environmental events. Moreover, self-efficacy is also consistent with Lazarus' (1966; Holroyd & Lazarus, 1982; Lazarus & Folkman, 1984a) notion of secondary appraisal.

Witmer et al. identified a second factor, irrational beliefs, which also was found to discriminate between good and poor copers, with the poor copers scoring higher on this factor. This finding is consistent with Ellis' (1962) rational-emotive theory of emotional distress. Ellis (1962) has outlined a set of irrational beliefs which he postulates as being the most common sources of emotional distress. A number of empirical studies support the hypothesis that irrational beliefs mediate the arousal of emotional distress (Rohsenow & Smith, 1982; Smith, Houston, & Zurowski, 1984).

To review and summarize, the relationships among arousal, cognition and emotional states have been examined as they relate to psychological stress. The transactional model of stress articulated by Lazarus and his colleagues (Lazarus, 1966; Holroyd & Lazarus, 1982; Coyne & Holroyd, 1982; Lazarus & Folkman, 1984a) and the cognitive-based views of behavior have recently emerged in a much larger Zeitgeist within the field of psychology (Kazdin, 1982). The transactional model and cognitive-behavioral interventions are "similar in their emphasis on the active role of the individual in shaping stress experiences and on the importance of cognitive processes both in determining stress responses and in guiding efforts to manage and control stress" (Holroyd, Appel & Andrasik, 1983, p. 220). Cognitive-behavioral interventions, although encompassing a wide variety of techniques, share the critical assumption that altering thought process will alter behavior (Mahoney & Arnkoff, 1977; Kazdin, 1982). Although a certain level of cognitive development would seem to be necessary, cognitive

behavioral techniques, in conjunction with traditional operant procedures, have been successfully employed with children as young as four years of age (Keogh & Glover, 1980; Waters, 1982). Moreover, Keogh and Glover (1980), upon reviewing the generality and durability of cognitive training effects, conclude that "cognitive training approaches appear potentially useful interventions with exceptional children" (p. 80).

The cognitive-behavioral and relaxation approaches which provide the basis of the coping skills treatment assessed in the present study are outlined below and are viewed from a transactional model perspective. In addition, the few studies which have attempted to utilize and evaluate these procedures in the reduction of anger will be described.

Cognitive-Behavioral Approaches to Stress Reduction

Mahoney and Arnkoff (1977) have classified contemporary cognitive learning therapies into three different approaches: Cognitive restructuring, problem solving therapies and coping skills therapies. Cognitive restructuring involves instructing individuals to recognize and modify maladaptive thoughts. Ellis' (1962) rational-emotive therapy (RET) is the best known application of this approach. RET involves restructuring one's maladaptive or irrational thoughts which are assumed to cause subjective distress. Greiger (1982) has developed a model of anger based on the tenents of RET. Cognition is viewed as playing a significant role in emotional arousal by mediating aversive events. Due to irrational beliefs (faulty appraisals), the individual

cognitively attributes the consequent emotional reaction as anger. "Within this model, anger is seen as being aroused when an individual holds irrational ideas or philosophies and/or when a person makes situationally specific assumptions that logically lead to anger" (Greiger, 1982, p. 69).

Cognitive restructuring has also been incorporated into the self-instructional training advocated by Meichenbaum (1975). Covert speech or "self-talk" have been demonstrated to dramatically influence one's performance on a wide variety of tasks (Mahoney & Arnhoff, 1977). In addition, Beck (1976) utilizes cognitive restructuring techniques in his "cognitive therapy" for depression.

A second approach to cognitive learning therapy resulted from the work of D'Zurilla and Goldfried (1971) and is called behavioral problem-solving. The basic premise which underlies their model is that:

> Much of what we view clinically as 'abnormal behavior' or 'emotional disturbance' may be viewed as ineffective behavior and its consequences, in which the individual is unable to resolve certain situational problems in his life and his inadequate attempts to do so are having undesirable effects, such as anxiety, depression, and the creation of additional problems (p. 107).

Spivack and his colleagues (e.g., Spivack, Platt, & Shure, 1976) receive much of the credit for the recent growth of problem-solving therapies. They have reported differences in the problem-solving skills of "normal" and "deviant" populations, as well as the successful implementation of systematic training in personal problem solving.

Coping skills therapies are a third category of cognitive learning therapy and are a heterogeneous collection of procedures that overlap with both cognitive restructuring and problem-solving approaches (Mahoney & Arnkoff, 1977). The emphasis of this approach is on helping the person to develop a variety of coping skills which might facilitate their adaptation to a number of stressful situations. These skills include self-instructional procedures, relaxation training, meditation, self-distraction, and covert modeling. It appears, then, that the various coping skill approaches attempt to influence what Bandura (1977) has conceptualized as the major sources of efficacy information (refer to Figure 2.1). In other words, the development of a repertoire of coping skills would be presumed to enhance the individual's expectations of personal efficacy.

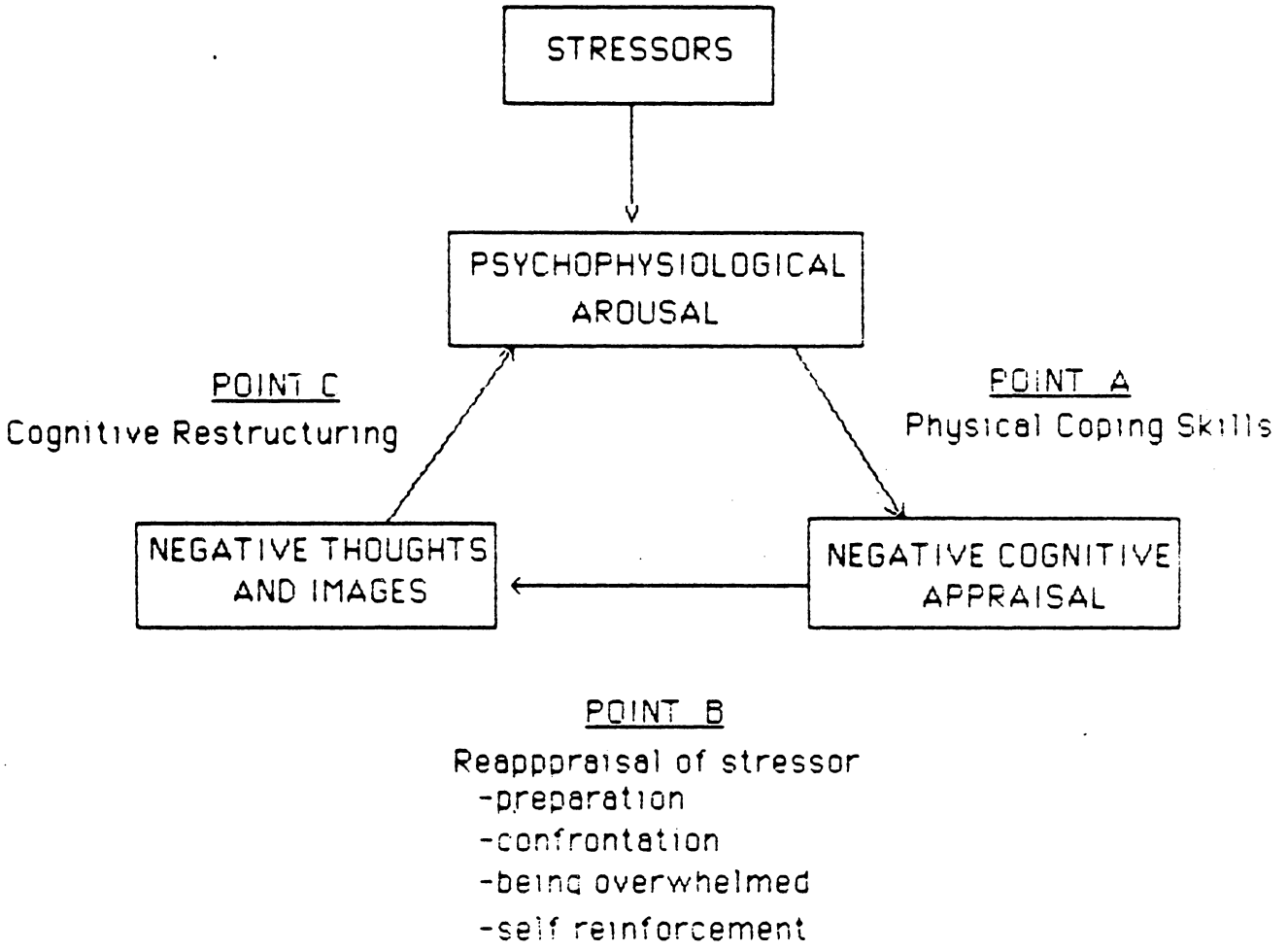
Stress Inoculation Training

Stress inoculation training, which will be one of the primary treatments of the present study, is a multilevel coping-skills method developed by Meichenbaum and his colleagues (Meichenbaum, 1975; Meichenbaum & Cameron, 1983; Meichenbaum & Jaremko, 1982; Jaremko, 1984) that uses the transactional model of stress and coping. Figure 2.2 illustrates some of the major components of the transactional stress- coping model and provides a useful framework for understanding the various treatment components constituting stress inoculation.

The stress inoculation technique, analogous to an inoculation in a medical sense, involves exposing the individual to manageable doses of stress, while coping skills are taught. By gradually increasing the

Figure 2.2

Conceptual Model for Stress Responding[1]



[1] This figure is adapted from Jeremko (1983, 1984)

amount (or dose) of stress, the individual learns to cope with stressful events that have a high probability of occurrence, such as criticism from one's supervisor. Stress inoculation attempts to enhance the individual's ability to cope with future stressors by combining self-instruction, cognitive restructuring and problem-solving strategies. The goal of stress inoculation is to "teach a comprehensive and flexible set of coping behaviors that can be applied across time and across situations" (Jaremko, 1984), thus promoting its generalization and maintenance.

Stress inoculation training generally consists of three phases: education, skills acquisition and rehearsal, and application (Meichenbaum & Turk, 1976; Meichenbaum & Cameron, 1983). In the first phase, the individual is provided with a conceptual framework for understanding his or her autonomic reactivity and cognitive behavior in response to stressors. For example, learning about the particular stressors surrounding the work environment would be a task conducted during this phase. In addition, the individual learns to recognize the cognitions elicited by such stressors (e.g., work-related events); and, finally, how these cognitions affect their physiological and emotional responses. Self-monitoring techniques are employed during this stage to help demonstrate to the individual how his or her own reactions affect the stress cycle (i.e., the transactional model of stress). Warrenfeltz et al. (1981), for example, have found self-monitoring procedures to be an effective technique for promoting improved

interpersonal interactions of behavior disordered adolescents within a vocational setting.

The second phase of stress inoculation training is designed to provide the individual with a variety of coping techniques to be employed during the coping process. The coping techniques include both direct action and cognitive coping procedures (Meichenbaum & Turk, 1976). These two approaches coincide with Lazarus' (Lazarus & Holroyd, 1982; Lazarus & DeLongis, 1983; Lazarus & Folkman, 1984a) description of problem-oriented and emotion-focused coping, respectively. The various skills (e.g., communication, problem-solving, cognitive restructuring, relaxation, etc.) are introduced and rehearsed in the second phase.

The final phase of stress inoculation training involves the application of newly acquired coping skills in increasingly stressful imaginal and roleplay situations. The generalization and maintenance of coping skills is the primary emphasis of this phase.

The efficacy of stress inoculation training has been demonstrated for the management of interpersonal anxiety (Meichenbaum & Turk, 1976), experimentally induced pain (Turk, 1978; Vallis, 1984), test anxiety (Hussian & Lawrence, 1978), anger (Novaco, 1974, 1975, 1976, 1978, 1979; Feindler & Fremouw, 1983), social anxiety (Jaremko, 1983), and occupational stress (Ganster, Mayes, Sime & Tharp, 1982; West, Horan & Games, 1984; Murphy, 1984).

Murphy (1984), in a recent review of the occupational stress management literature, concluded that most cognitive-behavioral

programs include a relaxation exercise as a supplement. As a result, it becomes difficult to disentangle the specific benefits of a cognitive approach from the combination of cognitive and relaxation procedures. The few studies which provide a component analysis of the stress inoculation paradigm (Novaco, 1974, 1975; Vallis, 1984; West, Horan & Games, 1984) indicate that the coping skills component (i.e., skills acquisition phase) is its principal component. However, empirical findings generally indicate that the complete stress inoculation treatment package is superior to its component treatments (West, Horan & Games, 1984; Novaco, 1974, 1975, 1976). An exception to this finding is provided by Vallis (1984), who concluded that only the skills training component is essential in helping individuals tolerate experimental pain.

Most of the empirical findings regarding the efficacy of the stress inoculation approach have been generated in laboratory settings with normal adults. External validity remains an empirical issue, since evidence for the generalizability of these findings to applied clinical settings is virtually nonexistent. The few studies which have utilized the stress inoculation approach for the treatment of stress/anger problems for behaviorally disordered and delinquent children and adolescents will be described below.

Progressive Relaxation Training

As noted previously, physiological and emotional arousal have been identified as a central focus in stress research. Consequently, relaxation training is often taught as a supplementary skill in the

cognitive coping skills approach and will be further evaluated in this study. The most popular procedure for promoting relaxation is referred to as progressive relaxation (PR), which originated with the work of Edmund Jacobson in the late 1920s. Jacobson's approach was quite lengthy and was not used to any great extent until Wolpe (1958) simplified the procedure and incorporated it into systematic desensitization (Goldfried, 1977). According to Bernstein and Given (1984), the theoretical basis for progressive relaxation is derived from the underlying assumption that anxiety and other emotional states (e.g., anger) involve subjective, overt behavioral, and physiological components, all of which interact to some degree. For example, when physiological arousal is perceived and labeled as "anger" or "anxiety", the individual reports being angry or anxious. Such cognitions further enhance autonomic arousal. "This leads to increased subjective discomfort and even more arousal, in a continuing spiral that may lead to panic, cognitive flooding, or a variety of other behavioral and physiological consequences" (Bernstein & Given, 1984, p. 44). The underlying assumption of progressive relaxation is consistent with Schachter and Singer's (1962) theory of emotion.

According to Bernstein and Given (1984), progressive relaxation training attempts to reduce the autonomic arousal component "indirectly" by altering skeletal muscle tension. "As muscle tension drops, other, less directly accessible aspects of autonomic arousal, such as heart rate and blood pressure, are also lowered" (p. 44). They suggest that the following benefits may also accrue: (1) a greater

adaptive responses to such stimuli, and (3) learning to utilize more rational cognitions that help to eliminate further problematic arousal.

Lehrer and Woolfolk (1984), in a recent review on the empirical literature on stress reduction, examined the evidence for the "specific-effects" hypothesis. This hypothesis states that a treatment that is oriented to a specific modality (i.e., behavioral, cognitive, or somatic) will have the greatest effect on symptoms of that modality. Upon reviewing the findings which compared relaxation therapy with cognitive therapies, they concluded that "there is considerable evidence for greater cognitive effects for cognitive therapy than for relaxation therapy, but much less evidence for greater somatic effects for relaxation therapy" (pp. 429-430). They suggest that additional research is needed using purely somatic dependent measures, since the outcome measures used in these studies of otherwise somatic disorders are cognitive in nature (i.e., self-report measures). Lehrer and Woolfolk (1984) report that the available evidence indicates that most combinations of cognitive and relaxation training are more effective than is either therapy alone.

Cautela and Groden (1978), in an attempt to teach relaxation as a self-control procedure to handicapped children, have developed an innovative program. They contend that handicapped children and adolescents experience significant and unique stressors in their lives and require a flexible model for learning relaxation procedures. Although preliminary evidence for their approach is positive, they conclude that much remains to be done to validate their procedures.

Application of Cognitive-Behavioral Techniques to Stress/Anger-Management

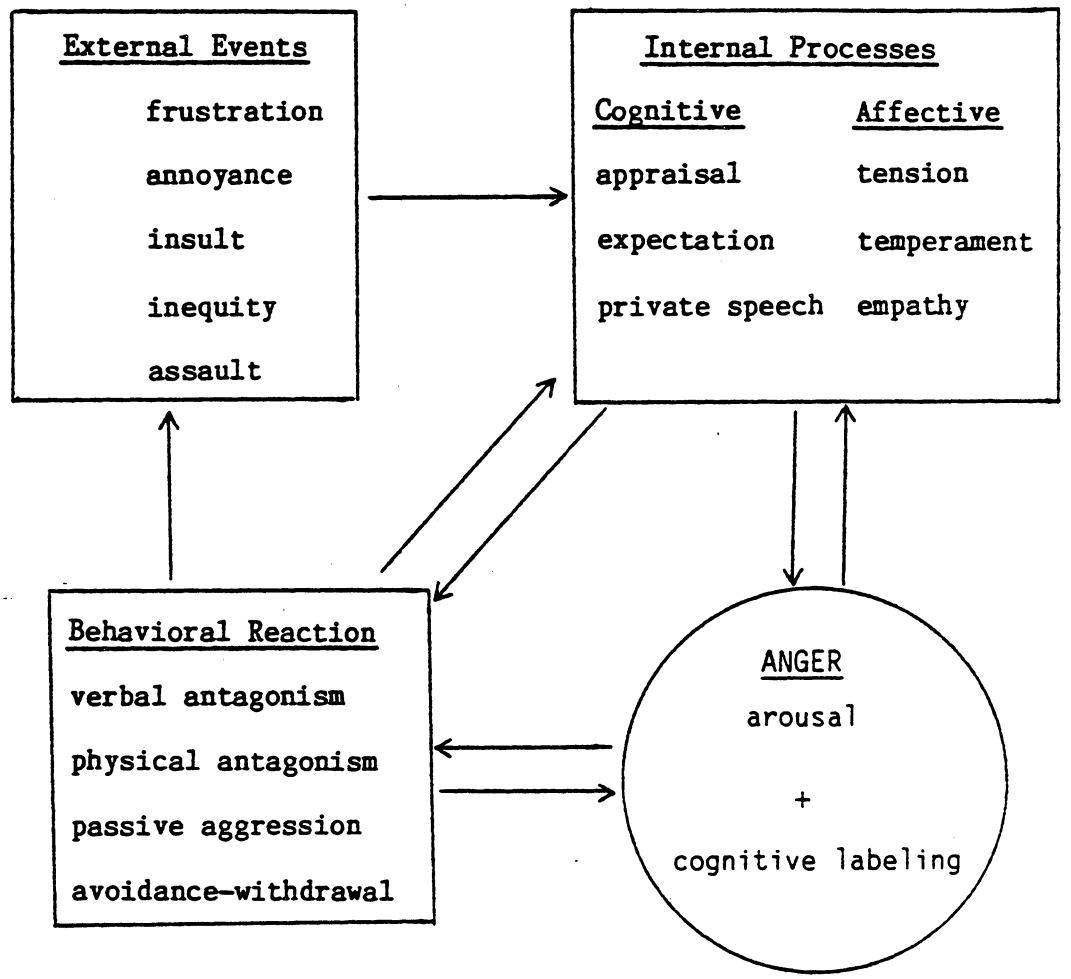
Researchers have only recently begun to examine the utility of cognitive-behavioral techniques for the management of stress-related anger. The current theorizing and empirical research about anger has been generated by the work of Raymond Novaco. Novaco (1978) views anger as "an affective stress reaction to aversive events called provocations" (p. 139). Novaco's conceptualization of stress/anger is based on the transactional model of stress (Lazarus, 1966), and incorporates a cognitively based stress inoculation treatment approach (Meichenbaum, 1975).

Novaco (1978) has construed anger as being determined by the interaction between external events (e.g., frustration, annoyance, insult), internal processes (appraisals, expectations, and private speech), and behavioral reactions. His model of anger and its determinants is summarized in Figure 2.3. Anger is viewed as a combination of physiological arousal and a cognitive labeling of that arousal. This conceptualization is consistent with Schachter and Singer's (1962) theory of emotion and the empirical findings of Stearns (1972) and Konecni (1975).

In his initial research, Novaco (1975) reported significant improvements in the anger-control of 34 adults who participated in six sessions of stress inoculation training. Session one (the educational phase) was conducted in groups, while sessions two through six were conducted individually. Novaco (1977a) later modified his procedures

Figure 2.3

DETERMINANTS OF ANGER AROUSAL(1)



(1)This figure is taken directly from R. W. Novaco's article, "Anger and coping with stress: Cognitive behavioral interventions," in J. P. Foreyt and D. P. Rathjen (Eds.), Cognitive Behavior Therapy: Research and Application. New York: Plenum Press, 1978, p. 141.

and successfully treated an aggressive and depressed adult within a hospital setting. Novaco (1977b) also used stress inoculation of anger in training law enforcement officers to cope with the conflict and anger encountered in their work. In a more recent study (Novaco, 1980), probation counselors were trained to administer stress inoculation to their clients.

Schlichter (1977; Schlichter & Horan, 1979) compared the efficacy of stress inoculation training with two components of stress inoculation (behavioral rehearsal and relaxation training) and a no-treatment control. The techniques were adapted in the individual treatment of anger-control problems of institutionalized juvenile delinquent males. Both treatments lowered anger responses on an imagined provocations test, while the stress inoculation group was the only one to produce significant reductions in verbal aggression during role-played provocations. Schlichter et al. (1979) concluded that the cognitive components of stress inoculation training may benefit clients traditionally regarded as not cognitively oriented.

Conaway (1982) investigated the effects of a modified stress inoculation procedure for anger management with emotionally disturbed adolescents in a school setting. Significant differences were found between the experimental and control groups on a variety of measures. Conaway concluded that exposure to the treatment procedure resulted in a subjective reduction in anger responses to provocation and an increase in affiliative classroom behavior.

Fleming (1982) evaluated the efficacy of an adapted stress inoculation procedure for anger-management with aggressive children in a residential treatment facility. The children, who ranged in age from nine to fourteen, were randomly assigned to an anger-management (stress inoculation) condition or an attention-control condition. Conaway found that the only significant changes were on self-report measures where children in the anger-management condition reported greater reductions in anger and aggression than children in the attention-control condition at post-treatments.

In a recent study, Feindler, Marriott and Iwata (1984) designed an anger control training program which was delivered in a group format for junior high school delinquents. The results from this study provided modest support for the efficacy of the cognitive-behavioral treatment procedures. However, the researchers point out that conclusions from this study suffer from methodological confounds. Feindler et al. argue for continued research efforts in the area of self-control training.

To review and summarize, research that evaluates relaxation and cognitive approaches to stress/anger management provides evidence that they may be effective in the reduction of physiological and emotional arousal in children and adults. However, the research has concentrated on the reduction of stress/anger in residential, delinquent adolescents and normal adults with chronic anger problems. The efficacy of these techniques with handicapped individuals in vocational settings is yet to be determined. The purpose of the present study is to assess the

efficacy of progressive relaxation and stress inoculation procedures in decreasing the level of occupational stress/anger of handicapped students in pre-vocational training.

Chapter 3

METHODOLOGY

Introduction

The purpose of this research was to compare the effectiveness of two treatment strategies in decreasing the level of occupational stress of handicapped students in pre-vocational training. Handicapped work adjustment students enrolled at Woodrow Wilson Rehabilitation Center (WWRC) were randomly assigned to one of two treatment conditions or a waiting-list control group. A factorial design having repeated measures - including pre-test, treatment, post-test, and four week follow-up - was used to evaluate changes in the group's level of stress and coping strategies. The dependent variables were chosen in order to represent three classes of strain responses: psychological, physiological, and behavioral. Thus a multivariate assessment procedure was used to provide the data for an analysis of changes in occupational stress due to treatments.

The methodology utilized in this study is described in the remainder of this Chapter. Information concerning research design, including independent and dependent variables, measurement instruments, setting, and subjects is presented. Research questions and procedures for the collection and analysis of data are also discussed.

Setting

The Woodrow Wilson Rehabilitation Center of the Virginia Department of Rehabilitative Services served as the setting for the research study. WWRC, located in Fishersville, Virginia, provides pre-vocational and vocational training to handicapped individuals. Many of the Center's clients are in the process of making the transition from school to work. Additional information regarding WWRC and letters of support for the proposed study can be found in Appendix A.

Work Adjustment

Because of the emphasis on the development of pre-vocational skills, the Work Adjustment program at WWRC was targeted as the specific setting for the study. The stated mission of the Work Adjustment program is to teach the basic skills required for successful training and employment to those individuals whose skill deficit is a reflection of a lack of adequate training and who are believed to have the potential for competitive employment upon entrance to the program.

According to the criteria for admission, the program is not intended for those who are expected to be limited to sheltered workshop employment or for those whose adjustment problems are primarily a reflection of a significant emotional or mental disturbance or have personality disorders characterized by explosiveness or aggressive acting out which require primary psychiatric or psychological therapy to modify.

The Work Adjustment program is prepared to offer continued support to those clients who have had emotional disturbances, but who have achieved a stable remission and do not have residual symptoms which significantly reduce their potential to achieve the goals of the Work Adjustment program or for subsequent training and employment (Source: Work Adjustment Program Criteria for Admission).

The Work Adjustment program incorporates a variety of behavioral management techniques, including a token economy system, which have been developed to assist the clients in achieving program objectives. The program is divided into three structured phases (Groups I, II and III). Each phase has specific behavior objectives that the client must achieve in order to be promoted to the next phase. Operationally defined program objectives and client record form for the token economy system can be found in Appendix B.

Subjects

Treatment Samples

Approximately two-thirds of the Work Adjustment population at WWRC are identified as having a primary disability of mental retardation (MR), while the remaining one-third is identified as primarily emotionally handicapped (EH). Disability criteria were operationally defined as those established by the Department of Rehabilitation Services for the purposes of this study.

A total of fifty-five participants were selected from among the work adjustment clients at the Woodrow Wilson Rehabilitation Center. The subjects selected for the study ranged in age from sixteen to twenty-two years, and reflected the above mentioned proportion of mentally retarded to emotionally handicapped clients. In addition to the treatments being assessed in the present study, all clients were provided services already established in the Work Adjustment program.

Subjects were selected for participation in the following manner. The research program was explained to the work adjustment instructors and counselors through a program staffing. The staff was then asked to refer individual clients whom they felt might benefit from the proposed stress reduction treatment program. The referred clients were then screened by the experimenter and informed of the purpose of the study. Subjects were told that several techniques have been developed which might assist their progress in the Work Adjustment program by reducing their levels of perceived stress and anger.

After the stress reduction project was explained to the subject, he or she was asked to participate on a volunteer basis. The individuals were requested to attend all sessions. Subjects were informed that they would receive 25 bonus points for each session they attend. These extra points can be exchanged for reinforcers such as time off, craft projects, hot and cold drinks, and other items through the token economy established in the Work Adjustment program. No coercive techniques other than a simple request and a promise of bonus points were employed to solicit subjects' participation. The informed consent

form given to the subjects prior to any experimentation is reproduced in Appendix C.

In order to randomly assign subjects to treatments, it was explained to subjects that demand for the treatment exceeded supply and that the training would proceed at two times, the second of which would begin at a later date. In order to ensure equity, subjects were instructed that a lottery would be used to determine who will receive the training first. The subjects assigned to the waiting-list control group received the 25 bonus points for their participation in the pre-, post-, and follow-up assessments.

Research Design

Students identified as either mentally retarded (MR) or emotionally handicapped (EH) were randomly assigned to one of three groups. A 2:1 ratio of MR subjects to EH subjects were randomly assigned to the three groups in an attempt to more accurately reflect the work adjustment population of the comprehensive vocational rehabilitation center involved in this study. Following the random assignment of subjects to groups, the three conditions (Stress Inoculation, Progressive Relaxation and Waiting-list Control) were then randomly assigned to the groups. The design of the study consists of a true experiment (Cook & Campbell, 1979) with two treatment conditions and a control group and pre- and post-measures on all criterion measures.

A Split-Plot Factorial Design (Kirk, 1982, pp. 489-569) or a 3x2x3 Factorial Design with Repeated Measures (Winer, 1971) multifactor experiment was utilized to evaluate the effects of treatments. The

layout of this design is shown in Table 3.1. Both Kirk (1982) and Winer (1971) discuss the appropriateness of designs having repeated measures for investigations of rates of learning as a function of treatment effects. Treatment and control groups were measured on all the dependent variables.

VARIABLES

A brief description of the independent and dependent variables is provided in Tables 3.2 and 3.3. The four independent variables in Table 3.2 are classified as to whether they are metric or nonmetric and covariates or factors. Table 3.3 briefly outlines the dependent variables.

Independent Variables

Covariate. Prior to the beginning of the experimental treatment, one independent variable, IQ, was collected for all subjects. This variable was reported in terms of scaled scores.

Factors. The next three nonmetric independent variables are identified as factors. Treatment groups included: Trt 1 with fifteen students, ten from the MR sample and five from the EH sample, receiving stress inoculation training; Trt 2 with fifteen students, ten from the MR sample and five from the EH sample, receiving progressive-relaxation training; and a Waiting-list Control Group with fifteen students, ten from the MR sample and five from the EH sample. Variable three represents the two categories of Work Adjustment students -- mentally retarded students (MR) and emotionally handicapped students (EH). Subjects received three measures of the dependent variables

Table 3.1

Factorial Design with Repeated Measures

Treatment Group	Sample	Pre-Test (Measure 1)	Treatment	Post-Test (Measure 2)	Time	Follow-up (Measure 3)
Trt 1 (n=15)	MR(n=10) EH(n=5)	Psychological Physiological Behavioral	5 weeks SIT	Psychological Physiological Behavioral	4 weeks	Psychological Physiological Behavioral
Trt 2 (n=15)	MR(n=10) EH(n=5)	Psychological Physiological Behavioral	5 weeks PRT	Psychological Physiological Behavioral	4 weeks	Psychological Physiological Behavioral
Waiting-list Control (n=15)	MR(n=10) EH(n=5)	Psychological Physiological Behavioral		Psychological Physiological Behavioral		Psychological Physiological Behavioral

Note: MR = Mentally Retarded Clients; EH = Emotionally Handicapped Clients. SIT = Stress Inoculation Training; PRT = Progressive Relaxation Training. Psychological, Physiological and Behavioral represent the three classes of strain responses (dependent variables).

throughout the study including pre-test, post-test, and follow-up. This factor is identified as variable four -- order of measures.

Dependent Variables

The dependent variables were chosen in order to represent three classes of stress responses: psychological, physiological, and behavioral. All dependent variables, with the exception of the behavioral ratings, were measured following the presentation of an imagined provocation sequence (Novaco, 1975). The provocation content was presented via an audio cassette tape to subjects on an individual basis. The provocation content was derived from work adjustment objectives that have been established at WWRC (refer to Appendix B). The full content of the experimental provocations can be found in Appendix D.

1. Psychological (self-report) measures:

(a) State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, & Jacobs, 1983): The STAI is comprised of separate self-report scales for measuring state and trait anxiety. The S-Anxiety scale (STAI Form Y-1) consists of 20 statements concerning how an individual feels "right now, at this moment." The T-Anxiety scale (STAI Form Y-2) consists of 20 statements that evaluate how an individual generally feels. Each item is accompanied by a 4-point response format ranging from 1 (almost never) to 4 (almost always). Scores can range from 20 to 80 on each of the two scales. The higher the score, the greater the general level (trait) and/or situational level (state) of anxiety.

TABLE 3.2

Description of Independent Variables

Variable	Description	Variable Type
X1	IQ (Full Scaled Scores)	Independent/Metric/Covariate
X2	Type of Treatment -Stress Inoculation (Trt 1) -Progressive Relaxation (Trt 2) -Waiting-list Control	Independent/Nonmetric/Factor
X3	Sample -Mentally Retarded Clients (MR) -Emotionally Handicapped Clients (EH)	Independent/Nonmetric/Factor
X4	Order of Measures (Time)	Independent/Nonmetric/Factor

TABLE 3.3

Description of Dependent Variables Representing the Three Classes of Strain Responses

Variable Description	Variable Score	Variable Type
Psychological (Self-Report) Measures		
State-Trait Anxiety Inventory (STAI)	Raw Scores	Metric
-State-Anxiety Scale		
-Trait-Anxiety Scale		
Brief Symptom Inventory (BSI)	Raw Scores	Metric
-Somatization		
-Obsessive-Compulsive		
-Interpersonal Sensitivity		
-Depression		
-Anxiety		
-Hostility		
-Phobic Anxiety		
-Paranoid Ideation		
-Psychoticism		
-General Seventy Index (GSI)		
Anger Self-Report Scale	Raw Score	Metric
-Self-Report for Anger		
-Verbal Antagonism		
-Physical Antagonism		
-Constructive Action		
Physiological Measures		
Blood Pressure	Calibrated in millimeters of mercury	Metric
-Systolic		
-Diastolic		
Pulse Rate	Beats per minute	Metric

Table 3.3 (continued)

Description of Dependent Variables Representing the Three Classes of Strain Responses

Behavioral Measures

Vocational Adaptation Rating Scale (VARS)	Raw Scores	Metric
-Verbal Manners		
-Communication Skills		
-Attendance and Punctuality		
-Interpersonal Behavior		
-Respect for Property		
-Rules and Regulations		
-Grooming and Personal Hygiene		
-Total VARS Frequency		
-Total VARS Severity		

Normative data for Form Y are available for working adults, college students, high school students, and military recruits. Norms based on an earlier version (Form X) are also reported in the manual and include male neuropsychiatric patients, general medical and surgical patients, and young prisoners (Spielberger et al., 1983). The test authors report that more than 2,000 studies using the STAI have appeared in the research literature since the original manual was first published in 1980. Most individuals with a fourth- or fifth-grade reading ability respond to all of the STAI items without special instructions.

The test authors report that the test-retest correlations for the T-Anxiety scale range from .65 to .86, while the stability coefficients for the S-Anxiety scale range from .16 to .62. The authors point out that the relatively low stability coefficients were expected for the S-Anxiety scale since a valid measure of state anxiety should reflect changes in anxiety resulting from situational stress. Consequently, measures of internal consistency provide a more meaningful index of the reliability of S-Anxiety scale than test-retest correlations. The overall median alpha coefficients for the S-Anxiety and T-Anxiety scales for Form Y in the normative samples are .92 and .90, respectively (Spielberger et al., 1983). Evidence of the construct and concurrent validity of the S-Anxiety and T-Anxiety scales are reported in the manual. Derogatis (1982) notes that "because of its brevity and ease of use, as well as the distinction between current emotional reaction versus what may very well turn out to be a mediating variable

in stress experiences, the STAI continues to be an attractive instrument in stress research " (p. 280).

(b) Brief Symptom Inventory (BSI) (Derogatis, 1977): The BSI is a 53-item multidimensional self-report symptom inventory designed to measure symptomatic psychological distress of psychiatric and medical patients as well as non-patient individuals. It is essentially the brief form of the SCL-90-R (Derogatis, 1977). The BSI reflects psychological distress in terms of nine primary symptom dimensions and three global indices of distress. The nine primary symptom dimensions are Somatization (SOM), obsessive-compulsive (OBS), interpersonal sensitivity (INT), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). The three global indices were developed to represent summary measures of psychological disorder. The general severity index (GSI) combines information on numbers of symptoms and intensity of distress. Among the globals, the GSI provides the most sensitive single indicator of the respondent's distress level (Derogatis, 1977). The positive symptom total (PST) reflects only numbers of symptoms, while the positive symptom distress index (PSDI) is a pure intensity measure, adjusted for numbers of symptoms present (Derogatis, 1982). Each item of the BSI is rated on a 5-point scale of distress (0-4), ranging from 0 (not-at-all) to 4 (extremely).

The BSI is a measure of current point-in-time, psychological symptom status and "it may be utilized repeatedly, either to document trends through time, or in pre-post evaluations" (Derogatis, 1977, p.

10). Research has demonstrated that the instrument is highly sensitive to differences in various interventions in stress (Derogatis, 1982).

The BSI usually requires 7 to 10 minutes to complete, although it may be administered in a narrative mode which does increase the amount of time required to complete the test. Derogatis (1977) reports that several comparisons of self-report versus narrative report administrations of the scale did not reveal any consistent biases.

Reliability for the 9 symptom dimensions and 3 global indices of the BSI are of two types: internal consistency and test-retest. The test author reports that internal consistency coefficients (Cronbach's coefficient alpha) for the 9 dimensions of the BSI range from a low of .71 to a high of .85. Test-retest coefficients were established over a two week period. Coefficients ranged from a low of .68 to a high of .91 for the 9 dimensions. A stability coefficient of .90 was obtained for the GSI, suggesting that the BSI is a consistent measure across time. Evidence of the convergent, construct and predictive validity of the BSI is provided in the test manual (Derogatis, 1977). High convergence for the dimensions of the BSI with MMPI scales has been found, while results from structure-comparing factor analysis lend support to the construct validation of the BSI. The predictive value of the BSI in a broad range of substantive contexts has begun to be reported in the research literature, although the BSI has been "somewhat obscured by its longer and better-known parent instrument, the SCL-90-R" (Derogatis, 1977, p. 30).

(c) Anger Self-Report Scale (see Appendix E): Novaco (1975) developed a two-part self-report scale consisting of seven items to assess the degree to which an imaginal provocation experience made the individual feel angry on a 7-point scale (Part I) and a behavior choice or coping strategy measure that was used to obtain subjective probabilities for courses of action that a person might take when provoked (Part II). Six courses of action or behavior choices are assessed on a 7-point scale. "These courses of action were selected so as to represent 4 antagonistic behaviors (2 verbally and 2 physically aggressive) and 2 constructive coping actions" (Novaco, 1975, p. 18).

The verbal antagonism, physical antagonism, and constructive action indices consist of the combined scores for the pair of items composing each of those categories; scores range from 2 to 14 for each category.

2. Physiological measures: Cardiovascular measures are the most frequently utilized of physiological arousal in stress research (Nietzel and Bernstein, 1981).

(a) Systolic and diastolic blood pressure:

Blood pressure measurement was reported as changes in systolic and diastolic blood pressure calibrated in millimeters of mercury during pre-, post-, and follow-up assessment sessions. Blood pressure assessment was conducted using a standard sphygomanometer and stethoscope over the brachial artery. Subjects were seated for a period of five minutes to allow blood pressure to stabilize prior to measurement and the activation of the imaginal provocation scenes, which are described below. On each measurement occasion, two blood

pressure readings were taken within a 60-second interval. These were averaged to generate a mean systolic and a mean diastolic value for that measurement period. Blood pressure was again measured immediately following the imaginal provocation to allow for later comparison to the subjects' initial resting blood pressure. Blood pressure was taken by a counselor with hospital emergency room experience. The counselor was blind to the experimental treatment conditions of the subjects.

Novaco (1975) reports that blood pressure has been used as indices of anger arousal by several investigators. Elevations in blood pressure have been found to be consistently related to arousal by provocation, and more specifically, to an individual's anger-coping style (Gentry and Kobasa, 1984).

(b) Pulse Rate: Pulse rate was reported as changes in beats per minute during the pre-, post-, and follow-up assessment periods. The measurement of pulse rate was conducted by the counselor in a similar fashion as that reported for the blood pressure readings.

3. Behavioral measures:

The Vocational Adaptation Rating Scales (VARS) (Malgady & Barcher, 1980), consisting of 133 items, was used to assess maladaptive behaviors in the Work Adjustment (vocational) context. The items have been organized into six scales reflecting of six general domains: (1) Verbal Manners, (2) Communication Skills, (3) Attendance and Punctuality, (4) Interpersonal Behavior, (5) Respect for Property, Rules and Regulations, and (6) Grooming and Personal Hygiene. In addition to the six scales, a total score is obtained by summing the

scores across the six general domains. Two types of scores are provided on the VARS. A frequency score reflects the frequency of occurrence of maladaptive behavior, as perceived by the rater; while a severity score was developed to reflect the likelihood that a given frequency of maladaptive behavior would result in termination of a worker's employment. Frequency scores for the VARS are obtained by rating each item on a 4-point scale (1-4), ranging from 1 (regularly) to 4 (never). Each item of the VARS is also rated on a 9-point scale to reflect the severity of the behavior (9=termination of worker very unlikely; 1=termination of worker very likely).

The test authors report that interrater reliability estimates are moderate to high and internal consistency reliability estimates are uniformly high. The validity of the VARS "has been established by significant correlations with selected scales on the American Association on Mental Deficiency Adaptive Behavior Scale (AAMD ABS) and the San Francisco Vocational Competency Scale. Concurrent and predictive validity were demonstrated with respect to decisions about placement of retarded workers in sheltered workshops" (Malgady & Barcher, 1980, p. 1). Standardization of the VARS was conducted on male and female adolescents and adults, ranging from severely retarded to borderline normal.

The VARS was recorded for each subject during the pre-, post-, and follow-up assessment sessions by two instructors in the Work Adjustment program. The total scale score was averaged across raters for interpretation to increase confidence in the evaluation. Each rater

was instructed to record the behavior of the worker (subject) he or she recalls having observed during the previous one week observation period. The instructors were trained in the rating technique prior to the treatment phase of the research program. The raters were blind to the experimental treatment conditions of the subjects.

Imaginal Provocations

Based on the approach developed by Novaco (1975), and subsequently utilized by others (Schlichter and Horan, 1979; Fleming, 1982; Moon, 1982), experimental provocation procedures have been designed to permit the evaluation of stress/anger reactions by using multiple measures in a multi-method context. The full context of the imaginal provocations can be found in Appendix D. The provocation content was derived from situations most likely to provoke stress, and specifically anger reactions, in the work environment. Three hypothetical conflict situations were deduced from clinical observations and discussions with WWRC staff members. All three provocations are interpersonal in nature. A separate imaginal provocation situation was presented during the pre-, post-, and follow-up assessment periods and in the order presented in Appendix D.

The imaginal provocations were audiotaped along with the following instruction: "Now close your eyes and imagine the following scene." Following each presentation, there was a period of continued imagination for 30 seconds, as the subject was instructed: "Now go right on imagining that as if it were actually happening."

Procedure

All subjects (experimental and control) were exposed to individual pre-, post-, and follow-up assessment sessions. In the pre-treatment phase (weeks 1-2) subjects were screened, selected and contacted for consent. Pre-treatment assessment was also conducted. During the intervention phase (weeks 3-7), a total of ten group meetings - consisting of one hour sessions twice per week - was scheduled with the experimenter/therapist. In the post- treatment phase, assessment was repeated on all measures. Follow- up assessment was conducted four weeks after the end of the intervention phase. Details of these phases are presented below.

Pre-treatment Phase. The subject selection process has been detailed earlier. As a potential subject, the WWRC client met individually with the experimenter, who explained the study and obtained consent to participate. Consent forms used in the study are found in Appendix C.

Pre-treatment assessment was conducted in the format established by Novaco (1975). The pre-treatment procedures consisted of the imaginal provocation and the dependent measures which were administered individually to each subject before the first session of the treatment package (the subjects in the waiting-list control condition followed a similar routine).

Before beginning the imaginal provocation, the subject was seated for a period of five minutes to allow blood pressure to stabilize. The subject was reminded that a variety of measures would be taken, and

they were identified and explained. The first group of dependent measures consisted of the systolic and diastolic blood pressure readings and pulse rate. Blood pressure and pulse rate was again measured immediately following the imaginal provocations to allow for later comparison to the subjects' initial resting blood pressure and pulse rate. The second group of dependent measures involving the self-report inventories were then completed. The behavior rating scale (VARS) was completed by the work adjustment staff during the pre-treatment phase (Weeks 1-2).

Intervention Phase. The two treatment conditions and the control condition will be explained session by session in this section. The two treatment programs consisted of a group format that included approximately four to five students per group. The actual training program consisted of one hour sessions twice per week for a five week period and was conducted by the author.

a. Stress Inoculation. The first two sessions of the intervention program constituted the cognitive preparation or educational phase of stress inoculation training. The primary objectives of this phase included the establishment of rapport between the students and group leader, and the initiation of an on-going assessment process through self-monitoring techniques. The educational phase involved an evaluation of the data or information collected by the students in an effort to establish trends regarding person-environmental interaction and potential problem areas. The skills acquisition and rehearsal components made up the second phase of

the training program. Approximately three weeks (6 sessions) were dedicated to the development of adaptive coping strategies. Students were taught to discriminate between tense and relaxed states, and a rationale for relaxation procedures was explained. The students then learned and practiced relaxation coping skills. During the skill acquisition and rehearsal phase, students were also introduced to cognitive interventions such as self-instructional training, learning to substitute calming, rational self talk for stress/anger arousing self statements. Students then rehearsed the use of self instruction when in a conflict situation. Evaluation of self-statements followed. The application phase constituted the final phase of the stress inoculation intervention and involved approximately 2 weeks (sessions 9-10). The primary objective of this phase was to review concepts and techniques of self-control, while evaluating their effectiveness in role-played provocation situations. Student contracts for specific change in target behaviors were developed and evaluated during this final phase. The specific stress inoculation training package is outlined in Appendix F. The training package incorporates many of the techniques used by Novaco (1983, Note 1) and Fiendler (1979, Note 2; 1981, Note 3).

b. Progressive Relaxation. Progressive relaxation training consisted of learning to tense and then to relax various groups of muscles all through the body, while at the same time having the individual attend to the feelings associated with both tension and relaxation. The focus of the current training procedure involved

having the work adjustment students develop tension-release procedures for 16 muscle groups (Bernstein & Given, 1984). As the training progressed, the muscle relaxation exercises were abbreviated to a point where the students would merely repeat a cue word like "relax" with each breath to create a state of muscle relaxation. Throughout the course of training, autogenic phrases were incorporated to supplement the progressive relaxation exercises. The specific progressive relaxation procedure is outlined in Appendix F and is based on the procedures described by Bernstein and Given (1984).

c. Waiting-list Control Group. Participants in the wait-list control group were told that they would receive training later. This group met on the same pre-, post-, and follow-up days as the treatment groups, at which time the self-report and behavior measures, along with the physiological recordings were obtained. These students later were given the opportunity to learn either stress inoculation or progressive relaxation training.

Research Questions

The primary interest in this study was whether or not the three factors (treatment, group and time) interact. Kerlinger (1973) and Kirk (1982) discuss the central issue of the interaction hypothesis for the behavioral researcher. In the present study, the research questions were directed at the first-order and second-order interactions.

Research Question 1

What is the differential effect of the three treatment conditions (SIT, PRT and Waiting-list control) across time (pre-, post- and follow-up assessment)? The null hypothesis, simply stated, is that of no interaction between the levels of the two factors.

Research Question 2

What is the differential effect of the three treatment conditions across time accounting for the group factor (MR and EH samples)? The null hypothesis is that of no interaction among the three factors.

Analysis of the Data

The multiple dependent measures described earlier were chosen in order to represent three classes of strain responses. The dependent measures were expressed in mean scores and included: changes in systolic blood pressure, changes in diastolic blood pressure, changes in pulse rate (physiological measures); State-Anxiety ratings, Trait-Anxiety ratings, Brief Symptom Inventory, Anger Self-Report Ratings, Verbal and Physical Antagonism ratings, Constructive Action ratings (psychological measures); and the Vocational Adaptation Rating Scales (behavioral measure).

Multivariate analysis of covariance was computed to verify the assumption that the two experimental and control groups did not differ significantly on the pre-test scores and, therefore, were initially comparable. The covariate consisted of the variable IQ.

Another multivariate analysis of variance was computed on the pre-test scores comparing the mentally retarded sample and the emotionally handicapped sample to assess whether or not they were initially comparable on the dependent measures.

Repeated measures multivariate analysis of variance was conducted for all treatment conditions through the multiple response measures of occupational stress. Due to pre-treatment test results (which are explained in detail in Chapter IV), the covariate, IQ, was not included in this final analysis. The pre-, post-, and follow-up measures included the two treatment conditions and the control group for analysis.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to evaluate the efficacy of progressive relaxation and stress inoculation procedures in decreasing the level of stress-related anger of handicapped students in pre-vocational training. This objective was accomplished by examining the pre-, post-, and four-week follow-up test data. Interview materials and observational data were also reviewed. The design consisted of two between-group factors--treatment conditions (SIT, PRT and W-LC), and disability groups (MR and EH)--and one within-group factor--Time (pre-, post-, and 4-week follow-up). There were eleven dependent measures: (1) change in systolic blood pressure, (2) change in diastolic blood pressure, (3) change in pulse rate, (4) State-Anxiety ratings, (5) Trait-Anxiety ratings, (6) Brief Symptom Inventory (BSI), (7) Anger Self-Report ratings, (8) Verbal Antagonism ratings, (9) Physical Antagonism ratings, (10) Constructive Action ratings, and (11) Vocational Adaptation Rating Scales (VARS).

The following research questions were investigated: (1) What is the differential effect of the three treatment conditions (SIT, PRT, and W-LC) across time (pre-, post-, and follow-up assessment)? (2) What is the differential effect of the three treatment conditions across time accounting for the group factor (MR and EH)? In other words, the research questions of the present study were directed at the first-order and second-order interactions.

The experimental and control samples were chosen from the Work Adjustment population at the Woodrow Wilson Rehabilitation Center, located in Fishersville, Virginia. Individual students were selected for inclusion in the experimental and control samples on the basis of their primary disability (MR or EH) and age (16-22 years).

Preliminary Analysis

Attrition Rate

Originally, this study was to include a total of 45 subjects with 15 subjects assigned at random to each of the two experimental samples, and 15 to the control sample. For reasons related to the purpose and conduct of this study, four replications were necessary. Pre-treatment test results were obtained on a total of 55 subjects who had indicated an interest in participating in the study. Forty (73%) of the original 55 subjects completed the study. The study was designed to reflect the 2:1 ratio of MR to EH students who participate in the Work Adjustment program. The dropout rate, however, resulted in the ratio being almost 3:1 (EH:MR). At least three dropouts came from each treatment condition. The dropout rate for the three treatment conditions was as follows: SIT (18%), PRT (26%), and W-LC (37%). Of the 15 dropouts, two subjects were unwilling to participate after the initial assessment period and another student was not available for follow-up evaluation due to the formal completion of his Work Adjustment program. The remaining 12 students were unavailable for posttreatment evaluation due to their programs being terminated prematurely. Four of these students required psychiatric hospitalization and the other eight experienced

emotional and behavioral difficulties of such magnitude that they were unable to satisfactorily complete their program.

Comparisons between dropouts and subjects on pre-treatment characteristics revealed no significant differences in age and IQ ($p > .05$). Furthermore, no differences were found between dropouts and subjects on any of the eleven dependent measures at pre-treatment ($p > .05$).

Relationships Among Dependent Measures

Pearson product-moment correlations were computed to determine the magnitude of relationship among the dependent measures. The correlation matrix was computed using the pre-treatment data for the intercorrelation analysis. The results are summarized in Table 4.1. The correlations between the physiological, self-report and behavioral measures are generally low and nonsignificant. This is consistent with findings reported in the literature (Meichenbaum, 1985; Arkowitz, 1981; Martin, 1961; Lehrer & Woolfolk, 1982; Lehrer & Woolfolk, 1984; and Lazarus & Folkman, 1984a) and the results obtained by Novaco (1975) in his initial study of anger control interventions. Correlations among physiological measures and between physiological, self-report, and behavioral measures have consistently been found to be low and nonsignificant. In the present study, the only significant correlations between the physiological and self-report measures were obtained between systolic blood pressure and two of the coping strategies. Change in systolic blood pressure was negatively correlated with verbal antagonism ($r = -.325$) and physical antagonism ($r = -.368$).

Table 4.1
Correlations Among Measures at Pre-Treatment Assessment Period

	(1) Sys	(2) Dias	(3) Pul	(4) S-A	(5) T-A	(6) BSI	(7) Ang	(8) VeR	(9) Phy	(10) Cons	(11) VARS
(1) Systolic Blood Pressure (N=40)											
(2) Diastolic Blood Pressure (N=40)	.29*										
(3) Pulse (N=40)	-.09	.03									
(4) State-Anxiety (N=40)	-.12	-.01	.13								
(5) Trait-Anxiety (N=40)	-.13	.04	-.03	***** .81							
(6) Brief Symptom Inventory (N=40)	-.14	-.09	.02	***** .63	***** .64						
(7) Anger Rating (N=40)	-.07	.28*	-.08	.20	.09	.17					
(8) Verbal Antagonism (N=40)	** -.33	-.20	.10	** .39	** .31	** .39	.23				
(9) Physical Antagonism (N=40)	** -.37	-.07	.06	*** .48	*** .40	* .29	-.08	**** .54			
(10) Constructive Action (N=40)	-.05	** .32	.12	*** -.42	*** -.39	-.08	.24	-.25	-.32**		
(11) Vocational Adaptation Rating Scale (N=40)	.10	.11	-.03	-.21	* -.28	* -.27	-.08	*** -.47	* -.30	.21	

* p<.10
** p<.05
*** p<.01
**** p<.001
***** p<.0001

The correlations between the physiological measures were consistent with those obtained by Novaco (1975), and revealed that measures of closely related functions (systolic and diastolic blood pressure) had higher correlations than the intercorrelations between different autonomic systems (blood pressure and pulse rate). The degree of association between blood pressure (systolic and diastolic) and pulse rate was very low (r = -.09 and r = .03, respectively).

Correlations between the self-report measures varied, but several were greater than .60, which is again consistent with Novaco's (1975) findings for the anxiety measures, for which correlations tended to be strongest for self-report indices. Interestingly, the correlations between self-report ratings of anger and ratings of coping behaviors were not significant. Possible explanations for this finding are reviewed in the next chapter. Correlations between the self-report measures of anxiety and distress and the ratings of coping behaviors were generally significant and in the expected direction. This was also true for the behavioral measure (VARS), where the highest correlations were obtained for the ratings of Verbal and Physical Antagonism (r = -.473 and -.304, respectively).

Pre-treatment Analyses

Demographic data for the 40 subjects who completed the study are presented in Table 4.2. This table contains the mean age and the mean Full Scale IQ with their corresponding standard deviations, as well as information concerning the variables of sex and race. Visual inspection revealed little difference between the treatment and control groups

Table 4.2
Demographic Data Across Experimental and Control Groups

Treatment Groups/ Disability Groups	N	Mean Age	Standard Deviation	IQ	Standard Deviation	Sex Ratio Male/Female	Race Ratio Black/White
SIT	14	19.93	1.69	72.36	7.06	4/10	6/8
MR	10	20.10	1.60	71.50	4.58	4/6	5/5
EH	4	19.50	1.88	74.50	11.11	0/4	1/3
PRT	14	19.86	1.62	71.00	7.18	10/4	5/9
MR	10	20.20	1.56	67.60	4.92	7/3	4/6
EH	4	19.00	1.45	79.50	4.21	3/1	1/3
W-LC	12	19.75	1.61	69.00	7.83	6/6	5/7
MR	8	19.50	1.69	65.38	6.85	4/4	0/4
EH	4	20.25	1.36	76.25	3.33	2/2	5/3
EH	12	19.58	1.63	76.75	7.23	5/7	2/10
MR	28	19.96	1.62	68.36	5.93	15/13	14/14
TOTAL	40	19.85	1.62	70.87	6.32	20/20	16/24

Note: MR = Mentally Retarded Clients; EH = Emotionally Handicapped Clients; SIT = Stress Inoculation Training; PRT = Progressive Relaxation Training; W-LC = Waiting-list Control.

(SIT, PRT, and W-LC) regarding the variables of age and IQ. As expected, the mean Full Scale IQ for EH students (76.75) was higher than it was for the MR students (68.36). This difference, however, was less apparent for the MR and EH students in the SIT group.

A 3x2 (Treatment x Disability) multivariate analysis of covariance (MANCOVA) indicated that the contribution of the covariate, IQ, was nonsignificant for all of the dependent measures at pre-treatment ($p > .05$). As a result of this finding, the remaining analyses were conducted without using IQ as a covariate. The summary MANCOVA table for pre-treatment data is presented in Table 4.3. Results of the 3x2 MANCOVA also indicated that there were no significant main or interaction effects at pre-treatment ($p > .05$). Although the 3x2 multivariate analysis of covariance did not indicate any main or interaction effects, the data were further explored using a 3x2 univariate analysis of variance for each of the eleven dependent measures. These additional analyses were carried out due to the exploratory nature of the study.

Results of the 3x2 univariate analyses indicated a treatment group effect for the anger self-report ratings, $F(2,33) = 3.90$, $p < .05$; a disability group effect for the Constructive Action ratings, $F(1,33) = 5.48$, $p < .05$; and a Treatment x Disability interaction effect for the Vocational Adaptation Rating Scale, $F(2,33) = 3.57$), $p < .05$. Means and standard deviations for the physiological, self-report and behavioral measures at pre-treatment are presented in Tables 4.4-4.7.

Table 4.3

Summary MANCOVA for Pre-treatment Data

Source of Variation	df_H	df_E	F	P
IQ	11	23	0.56	.8413
Treatment	22	46	1.24	.2629
Disability	11	23	0.84	.6090
Treatment x Disability	22	46	0.78	.7351

Table 4.4
Experimental and Control Group Means and Standard Deviations for Changes in Physiological Measures at Pre-Treatment

Treatment Condition/ Disability Group	N	Systolic Blood Pressure Mean	Systolic Blood Pressure SD	Diastolic Blood Pressure Mean	Diastolic Blood Pressure SD	Pulse Rate Mean	Pulse Rate SD
SIT	14	.43	4.64	3.50	4.13	5.00	6.83
EH	4	2.75	2.22	4.50	3.70	6.00	4.32
MR	10	-.50	5.10	3.10	4.41	4.60	7.78
PRT	14	.07	5.58	.43	5.15	6.21	4.69
EH	4	-.50	5.20	3.25	6.40	7.00	3.56
MR	10	.30	5.98	-.70	4.45	5.90	5.22
W-LC	12	2.42	4.34	.33	3.50	6.33	5.91
EH	4	1.25	5.91	.50	0.58	7.50	7.19
MR	8	3.00	3.66	.25	4.37	5.75	5.63
EH	12	1.17	4.49	2.75	4.25	6.83	4.80
MR	28	.79	5.12	.93	4.57	5.39	6.15
TOTAL	40	.90	4.93	1.48	4.47	5.82	5.75

Table 4.5
Experimental and Control Group Means and Standard Deviations for Self-Report Ratings of Anxiety and Distress at Pre-Treatment

Treatment Condition/ Disability Group	N	State-Anxiety Mean	State-Anxiety SD	Trait-Anxiety Mean	Trait-Anxiety SD	BSI Mean	BSI SD
SIT	14	45.29	10.91	46.00	7.39	1.25	.95
EH	4	49.75	4.79	47.50	2.65	2.00	.93
MR	10	43.50	12.32	45.40	8.67	.95	.82
PRT	14	36.86	11.86	41.50	9.50	.80	.68
EH	4	34.50	16.38	41.00	15.85	.99	.97
MR	10	37.80	10.50	41.70	6.82	.73	.57
W-LC	12	45.58	11.96	49.25	8.10	1.31	.76
EH	4	40.75	9.11	44.50	9.95	1.22	.89
MR	8	48.00	13.01	51.63	6.44	1.36	.74
EH	12	41.67	12.03	44.33	10.25	1.40	.96
MR	28	42.75	12.19	45.86	8.22	.99	.74
TOTAL	40	42.43	12.14	45.40	8.83	1.11	.81

Table 4.6
Experimental and Control Group Means and Standard Deviations for Self-Report Ratings of Anger and Coping Strategies at Pre-Treatment

Treatment Condition/ Disability Group	N	Anger Rating Mean	SD	Verbal Antagonism Mean	SD	Physical Antagonism Mean	SD	Constructive Action Mean	SD
SIT	14	4.07	2.34	4.29	2.46	6.43	4.27	9.93	3.34
EH	4	5.00	1.63	5.75	2.87	5.50	2.65	11.25	3.77
MR	10	3.70	2.54	3.70	2.16	6.80	4.85	9.40	3.20
PRT	14	2.14	1.17	5.43	3.82	5.14	3.46	9.50	3.67
EH	4	2.25	1.26	6.00	4.97	6.75	4.57	11.00	3.56
MR	10	2.10	1.20	5.20	3.55	4.50	2.95	8.90	3.73
W-LC	12	3.00	1.86	5.75	3.41	6.33	4.29	8.00	4.18
EH	4	3.75	1.26	4.00	2.83	3.75	1.71	12.50	1.29
MR	8	2.63	2.07	6.63	3.50	7.63	4.69	5.75	3.06
EH	12	3.67	1.72	5.25	3.47	5.33	3.17	11.58	2.87
MR	28	2.82	2.06	5.07	3.22	6.21	4.27	8.18	3.60
TOTAL	40	3.08	1.96	5.12	3.30	5.95	3.94	9.20	3.38

Table 4.7
Experimental and Control Group Means and Standard Deviations for the Total Vocational Adaptation Rating Scale (VARS) at Pre-Treatment

Treatment Condition/ Disability Group	N	Vocational Adaptation Rating Scale Mean	SD
SIT	14	506.07	20.25
EH	4	495.75	19.60
MR	10	510.20	19.95
PRT	14	498.29	34.14
EH	4	483.25	51.93
MR	10	504.30	25.38
W-LC	12	498.66	27.76
EH	4	522.50	8.39
MR	8	486.75	26.35
EH	12	500.50	33.94
MR	28	501.39	24.96
TOTAL	40	501.12	27.65

The treatment group difference for the Anger Self-Report ratings was further investigated using the Tukey HSD post hoc procedure. Comparisons between treatment groups revealed that subjects in the SIT condition scored significantly higher (X = 4.07) on their self-report ratings of anger for the imaginal provocation than did subjects in the PRT (X = 2.14) condition ($p < .05$). No other comparisons were significant ($p > .05$). Subsequent analysis of the disability group differences for the Constructive Action ratings indicated that the EH group's mean (11.58) was significantly higher than the MR group's mean (8.18) on this measure. The higher the score, the more appropriate and constructive is the self-report for dealing with the imaginal provocation situation.

The Treatment x Disability interaction for the Vocational Adaptation Rating Scale is depicted in Figure 4.1. The results of the simple-main effects and subsequent Tukey HSD post hoc analyses indicated that the EH group mean for the W-LC condition (522.50) was significantly higher than the EH group mean for the PRT condition (483.25), $p < .10$. The results also indicated that the EH group mean for the W-LC condition (522.50) was significantly higher than the MR group mean for the W-LC condition (486.75), $p < .10$.

Experimental Treatment Study Results

In this investigation, the differential effect of the three treatment conditions (SIT, PRT, and W-LC) across time accounting for disability (MR and EH) was the primary interest. A 3x2x3 multivariate

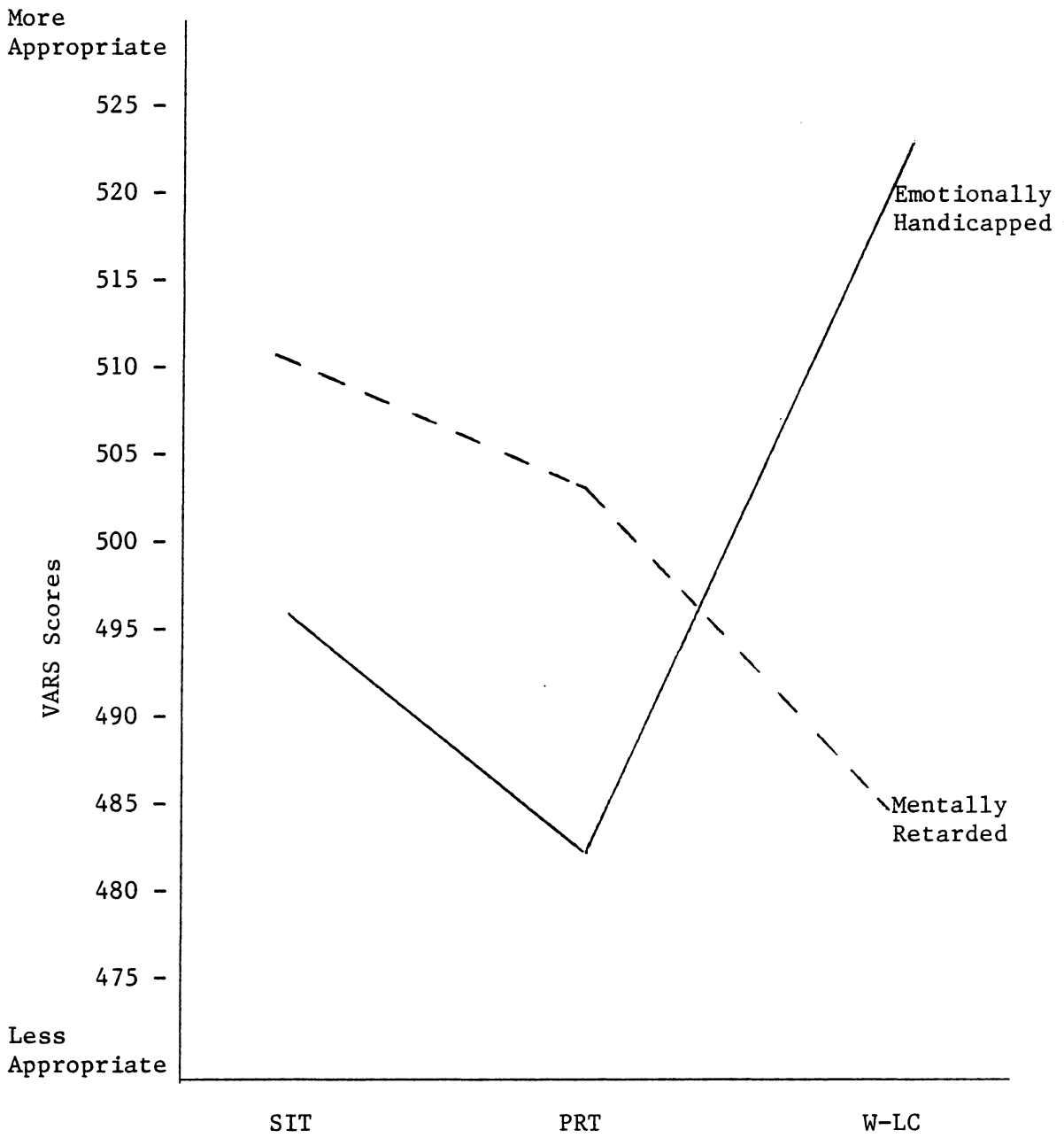


Figure 4.1

Mean VARS Scores as a Function of Treatment Condition and Disability Group

analysis of variance with repeated measures was performed to evaluate differential changes across time. The summary MANOVA table is presented in Table 4.8. The results of this analysis indicated that there were no significant main or interaction effects, $p > .10$. Due to the exploratory nature of this study, the data were further explored using a 3x2x3 univariate analysis of variance with repeated measures for each of the eleven dependent measures.

Results of the 3x2x3 univariate analyses indicated a significant time effect for the following dependent measures: Diastolic Blood Pressure, F (2,68) = 2.83, $p < .10$; Trait-Anxiety, F (2.68) = 2.70, $p < .10$; Verbal Antagonism ratings, F (2.68) = 2.87, $p < .10$; and Physical Antagonism ratings, F (2,68) = 3.29, $p < .05$. Means for the total group across time are presented in Table 4.9. Results of the 3x2x3 univariate analyses also indicated a significant treatment effect for the following dependent measures: State-Anxiety, F (2,34) = 3.33, $p < .05$; and Anger Self-Report ratings, F (2.34) = 4.71, $p < .05$. In addition, the analyses revealed a significant Disability x Time interaction for the Constructive Action ratings, F (2,68) = 3.87, $p < .05$ and a significant Disability x Time interaction for Trait-Anxiety ratings, F (2,68) = 2.90, $p < .10$. Experimental and Control group means for the physiological, self-report, and behavioral measures are presented in Tables 4.10-4.14.

The significant time effects were further investigated using the Tukey HSD post hoc procedure. The Tukey HSD post hoc procedure indicated a significant reduction in Diastolic Blood Pressure for the

Table 4.8

Summary MANOVA Table for the

Experimental Treatment Study

Source of Variation	df_H	df_E	F	P
Treatment	22	48	1.27	.239
Disability	11	24	0.60	.807
Treatment x Disability	22	48	0.84	.664
Time	22	116	1.37	.145
Treatment x Time	44	223	0.62	.968
Disability x Time	22	116	0.93	.559
Treatment x Disability x Time	44	223	0.77	.844

Table 4.9
Total Group Means for Dependent Measures Across Time

Dependent Measures	Pre-Treatment	Post-Treatment	4-Week Follow-up
Systolic Blood Pressure	0.90	0.65	0.33
Diastolic Blood Pressure	1.48	-0.28	0.38
Pulse Rate	5.83	5.48	6.55
State-Anxiety	42.43	41.33	41.08
Trait-Anxiety	45.40	46.28	43.20
BSI	1.11	1.21	1.08
Anger Rating	3.10	2.95	2.68
Verbal Antagonism	5.13	4.33	3.88
Physical Antagonism	5.95	5.35	4.48
Constructive Action	9.20	9.13	9.35
VARS	501.13	503.13	495.18

Table 4.10

Experimental and Control Group Means for Changes in Physiological Measures

Treatment Condition/ Disability Group	Pre-Treatment	Post-Treatment	Four-week Follow-up
SIT			
Systolic	.43	1.07	.64
Diastolic	3.50	.29	1.50
Pulse	5.00	5.50	7.21
EH			
Systolic	2.75	4.50	.50
Diastolic	4.50	.75	3.50
Pulse	6.00	4.50	6.70
MR			
Systolic	-.50	-.30	.70
Diastolic	3.10	.10	.70
Pulse	4.60	4.50	6.70
PRT			
Systolic	.07	-.14	-.36
Diastolic	.43	-.71	-.93
Pulse	6.21	5.50	5.43
EH			
Systolic	-.50	-.75	.50
Diastolic	3.25	0.00	-2.25
Pulse	7.00	5.00	6.25
MR			
Systolic	.30	.10	-.70
Diastolic	-.70	-1.00	-.40
Pulse	5.90	5.70	5.10
W-LC			
Systolic	2.42	1.08	.75
Diastolic	.33	-.42	.58
Pulse	6.33	5.42	7.08
EH			
Systolic	1.25	-1.00	-1.00
Diastolic	.50	-.50	-.75
Pulse	7.50	7.00	6.00
MR			
Systolic	3.00	2.13	1.63
Diastolic	.25	-.38	1.25
Pulse	5.75	4.63	7.63

Table 4.10 (continued)

Experimental and Control Group Means for Changes in Physiological Measures

Disability Group	Pre-Treatment	Post-Treatment	Four-week Follow-up
EH			
Systolic	1.17	0.92	0.00
Diastolic	2.75	0.08	0.17
Pulse	6.83	6.67	6.92
MR			
Systolic	0.79	0.54	0.46
Diastolic	0.93	-.43	0.46
Pulse	5.39	4.96	6.39

Table 4.11

Experimental and Control Group Means for the Self-Report Measures of Anxiety and Distress

Treatment Condition/ Disability Group	Pre-Treatment	Post-Treatment	Four-week Follow-up
SIT			
State-anxiety	45.29	43.07	43.21
Trait-anxiety	46.00	47.79	42.79
BSI	1.25	1.42	1.13
EH			
State-anxiety	49.75	51.75	52.50
Trait-anxiety	47.50	52.50	50.00
BSI	2.00	1.57	1.47
MR			
State-anxiety	43.50	39.60	39.50
Trait-anxiety	45.40	42.64	42.93
BSI	.95	1.36	1.00
PRT			
State-anxiety	36.86	35.71	36.64
Trait-anxiety	41.50	42.64	42.93
BSI	.80	.84	.67
EH			
State-anxiety	34.50	34.75	33.00
Trait-anxiety	41.00	44.50	40.25
BSI	.99	1.22	.97
MR			
State-anxiety	37.80	36.10	38.10
Trait-anxiety	41.70	41.90	44.00
BSI	.73	.69	.56
W-LC			
State-anxiety	45.58	45.83	43.75
Trait-anxiety	49.25	48.75	44.00
BSI	1.31	1.41	1.51
EH			
State-anxiety	40.75	49.75	47.25
Trait-anxiety	44.50	48.50	48.00
BSI	1.22	1.31	1.41
MR			
State-anxiety	48.00	43.88	42.00
Trait-anxiety	51.63	48.88	42.00
BSI	1.36	1.46	1.56

Table 4.11 (continued)

Experimental and Control Group Means for the Self-Report Measures of Anxiety and Distress

Disability Group	Pre-Treatment	Post-Treatment	Four-week Follow-up
EH			
State-anxiety	41.67	45.42	44.25
Trait-anxiety	44.33	48.50	46.08
BSI	1.40	1.37	1.28
MR			
State-anxiety	42.75	39.57	39.71
Trait-anxiety	45.86	45.32	41.96
BSI	.99	1.15	1.00

Table 4.12

Experimental and Control Group Means for Self-Report Ratings of Anger

Treatment Condition/ Disability Group	Pre-Treatment	Post-Treatment	Four-Week Follow-up
SIT	4.07	3.86	3.07
EH	5.00	5.25	3.75
MR	3.70	3.30	2.80
PRT	2.14	2.42	2.29
EH	2.25	2.25	2.25
MR	2.10	2.50	2.30
W-LC	3.00	2.50	2.67
EH	3.75	3.25	2.75
MR	2.63	2.13	2.63
EH	3.57	3.58	2.92
MR	2.82	2.68	2.57

Table 4.13

Experimental and Control Group Means for Ratings of Provocation Coping Strategies

Coping Strategy/ Treatment Group	Pre-Treatment	Post-Treatment	Four-Week Follow-up
SIT			
Verbal Antagonism	4.29	3.29	3.57
Physical Antagonism	6.43	6.07	4.57
Constructive Action	9.93	9.96	9.43
EH			
Verbal Antagonism	5.75	5.00	3.50
Physical Antagonism	5.50	7.00	4.25
Constructive Action	11.25	7.75	7.50
MR			
Verbal Antagonism	3.70	2.60	3.60
Physical Antagonism	6.80	5.70	4.70
Constructive Action	9.40	10.70	10.20
PRT			
Verbal Antagonism	5.43	5.43	4.50
Physical Antagonism	5.14	4.71	4.57
Constructive Action	9.50	9.43	8.57
EH			
Verbal Antagonism	6.00	6.50	5.75
Physical Antagonism	6.75	7.25	5.25
Constructive Action	11.00	9.25	10.25
MR			
Verbal Antagonism	5.20	5.00	4.00
Physical Antagonism	4.50	3.70	4.30
Constructive Action	8.90	9.50	7.90
W-LC			
Verbal Antagonism	5.75	4.25	3.50
Physical Antagonism	6.33	5.25	4.25
Constructive Action	8.00	7.92	10.17
EH			
Verbal Antagonism	4.00	2.75	2.75
Physical Antagonism	3.75	4.25	2.75
Constructive Action	12.50	10.25	10.75
MR			
Verbal Antagonism	6.63	5.00	3.88
Physical Antagonism	7.63	5.75	5.00
Constructive Action	5.75	6.75	9.88

Table 4.13 (continued)

Experimental and Control Group Means for Ratings of Provocation Coping Strategies

Coping Strategy/ Disability Group	Pre-Treatment	Post-Treatment	Four-Week Follow-up
EH			
Verbal Antagonism	5.25	4.75	4.00
Physical Antagonism	5.33	6.17	4.08
Constructive Action	11.58	9.08	9.50
MR			
Verbal Antagonism	5.07	4.14	3.82
Physical Antagonism	6.21	5.00	4.64
Constructive Action	8.18	9.14	9.29

Table 4.14

Experimental and Control Group Means for the Behavioral Measure (VARS)

Treatment Condition/ Disability Group	Pre-Treatment	Post-Treatment	Four-Week Follow-up
SIT	506.07	506.29	495.14
EH	495.75	502.00	488.00
MR	510.20	508.00	498.00
PRT	498.29	507.21	491.14
EH	483.25	500.00	489.25
MR	504.30	510.10	491.90
W-LC	498.67	494.67	499.92
EH	522.50	512.25	520.50
MR	486.75	485.88	489.63
EH	500.50	504.75	499.25
MR	501.39	502.43	493.43

total group from pre-treatment (X = 1.48) to post-treatment (X = -0.28), $p < .10$. The results of the Tukey HSD post hoc procedure revealed a significant reduction in Trait-Anxiety ratings for the total group from post-treatment (X = 46.28) to the four-week follow-up assessment (X = 43.20), $p < .05$. The results of the Tukey HSD post hoc procedure also indicated a significant reduction in Verbal and Physical Antagonism ratings between pre-treatment and four-week follow-up, $p < .05$. There were no significant differences between post-treatment and follow-up measurements. Mean Verbal Antagonism ratings for the total group at pre-treatment, post-treatment, and follow-up were 5.13, 4.33 and 3.88, respectively. Mean Physical Antagonism ratings at pre- and post-treatment, and follow-up were 5.95, 5.35, and 4.48, respectively.

The significant treatment effects were also investigated further using the Tukey HSD post hoc procedure. The results of the Tukey revealed that subjects in the PRT treatment condition reported significantly less State-Anxiety than did subjects in the SIT and W-LC conditions ($p < .10$). Mean State-Anxiety scores for the PRT, SIT and W-LC treatment conditions are 36.41, 43.86 and 45.06, respectively. The results of the Tukey HSD post hoc procedure also indicated that subjects in the SIT treatment condition reported significantly higher ratings of Anger (X = 3.67) for the imaginal provocation than did subjects in the PRT condition (X = 2.29), $p < .05$. These results need to be viewed cautiously, however, since the subjects in the SIT condition at pre-treatment were significantly higher in their self-report ratings of Anger than the subjects in the PRT condition.

The Disability x Time interaction for the Trait-Anxiety ratings is depicted in Figure 4.2. The results of the simple-main effects and subsequent Tukey HSD post hoc analyses indicated a significant reduction in Trait-Anxiety ratings between pre-treatment (X = 45.86) and four-week follow-up (X = 41.96) for the MR group, $p < .05$. Results also indicated that at the follow-up assessment period, the MR group's mean (41.96) was significantly lower than the EH group's mean (46.08) on this measure, $p < .05$. The Disability x Time interaction for the Constructive Action measure was a function of initial pre-treatment differences. Consequently, interpretations regarding this interaction need to be made cautiously and in light of the initial differences.

In summary, the results of the 3x2x3 multivariate analysis of variance with repeated measures indicated that there were no significant main or interaction effects, $p > .10$. Further investigation of the data, however, using a 3x2x3 univariate analysis of variance with repeated measures for each of the eleven dependent measures indicated a significant time effect for four of the eleven measures and a significant Treatment effect for two of the eleven measures. In addition, a Disability x Time interaction was also indicated for two of the measures.

Observations and Feedback Data

In order to further evaluate the stress inoculation and progressive relaxation training programs, it was essential to have some feedback from the students participating in this study. Feedback was requested

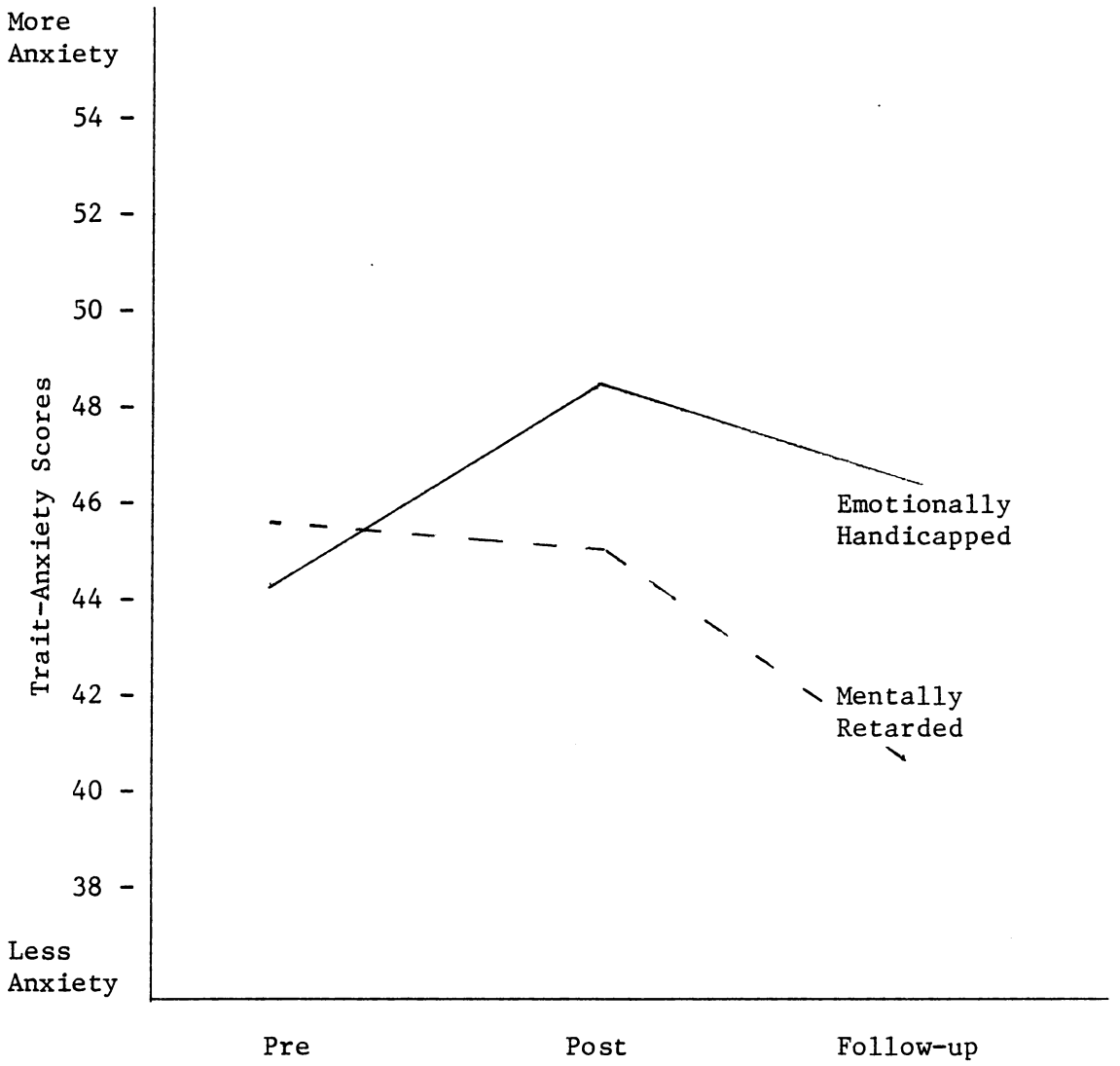


Figure 4.2

Mean Trait-Anxiety Scores as a Function of
Disability Group and Time

from the students on an ongoing basis throughout the treatment program. Bernstein and Given (1984) report that in most cases, the individual's self-report is the main source of information about the overall success of a program of progressive relaxation training (PRT). Seventy-four percent of the students who began the PRT program completed the entire sequence. The majority of the students reported that they were satisfied with the PRT procedures and found that the program enabled them to be more aware of the tension that leads to and results from stress-related anger. Moreover, they found the techniques helpful in reducing both general tension, and tension related to specific stressors. During the group sessions, the students generally reported a decrease in their levels of tension on the pre-post measure which was administered at each meeting. It was also observed that the amount of time required to reach deep relaxation decreased as the sessions progressed. Moreover, the students frequently appeared drowsy upon termination of the sessions, which was further suggestive of total relaxation. Homework assignments requiring the student to practice each skill on a daily basis and to document this practice by completing a PRT checklist was an integral component of the overall program. Feedback from these students indicated that while the majority claimed to practice PRT procedures on a regular basis, difficulties arose having them document this practice in a consistent manner. Problems with this aspect of the program were addressed in group discussions but did not appear to increase student compliance.

Eighty-two percent of the students who began the stress inoculation training (SIT) program completed the entire sequence. During the group sessions, the students were able to recognize and discuss provocation situations in their own histories and, specifically, those related to the work setting. A number of coping strategies were rehearsed and the students were able to demonstrate how they would utilize both cognitive (e.g., self-statements) and physiological responses as cues to employ coping skills to reduce the intensity of angry feelings. Homework assignments (i.e, anger diaries) were incorporated to enhance generalization and were designed to assist with the self-monitoring component of the SIT program. Similar to the observations noted for the PRT program, students in the SIT program experienced difficulty documenting their level of compliance with the homework assignments. The importance of self-monitoring was frequently addressed in the group format, but again did not appear to increase student compliance. Nevertheless, the majority of the students in the SIT group indicated that they felt the treatment program was beneficial to them and that it expanded their repertoire of coping responses.

Summary

The results of the study were presented in this chapter. Pearson product-moment correlations were computed to determine the magnitude of relationships among the dependent measures at pre-treatment. A 3x2 multivariate analysis of covariance was utilized to test the significance of the covariate, IQ, and to test the significance of the main and interaction effects at pre-treatment. The 3x2x3 multivariate

analysis of variance with repeated measures was used to test the significance of treatment across time accounting for disability. The data was further investigated using a 3x2 ANOVA and a 3x2x3 ANOVA with repeated measures for each of the eleven dependent variables.

Results of the study indicated that the correlations between the physiological, self-report and behavioral measures were generally low and nonsignificant. A major finding of the study was the lack of support for the differential effect of treatment across time accounting for disability. In other words, the interaction hypothesis of interest was not supported. Further analysis indicated that there was a significant time effect for four of the eleven measures and a significant treatment effect for two of the eleven measures. A Disability x Time interaction was also indicated for two of the measures.

Observational and interview material indicated that the students in both experimental groups generally responded positively to the treatment procedures, but evidenced difficulty complying with homework assignments. The students in the progressive relaxation training (PRT) program generally reported positive changes in general tension on the pre-post measures administered during group meetings, and the amount of time required to reach deep relaxation was found to decrease with each successive session. Students in the Stress Inoculation Training (SIT) program were able to recognize stress- and anger-eliciting situations in their history and were able to verbalize how they would utilize autonomic (bodily) responses as cues to employ coping skills to reduce

the intensity of angry feelings. Many of the difficulties that the students in both treatment conditions reported had to do with documenting their level of compliance with the homework assignments.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

The purpose of this chapter is to summarize the results and discuss the implications of these findings. The first section is devoted to a brief overview of the study. Next, the findings and their implications are discussed. Particular emphasis is given to treatment, measurement and methodological issues, as well as to identified strengths of the study. The final section contains recommendations for future research.

Summary of the Study

The purpose of this exploratory study was (1) to adapt progressive relaxation training (PRT) and cognitive-behavioral therapy (SIT) procedures to group formats with work adjustment clients in a comprehensive vocational rehabilitation setting, (2) to empirically evaluate the effectiveness of these treatments with a waiting-list control (W-LC) condition for the management of stress-related anger in a vocational setting, and (3) to determine whether cognitive-behavioral therapy (including relaxation training) was more effective than relaxation training alone.

The fundamental question addressed in this study was to what extent the coping strategies of handicapped individuals in a work environment can be significantly enhanced by employing stress and anger reduction procedures. A basic assumption of the study was the conceptualization of anger as an adverse reaction to stress. The following propositions, originally made explicit by Novaco (1975), also provided a framework

from which the therapeutic procedures evolved: (1) A person having the skills to respond in non-antagonistic ways to a provocation will have a lowered probability for stress-related anger arousal for that provocation than someone whose response options are primarily antagonistic, (2) awareness of one's own arousal will increase the probability that a person can regulate his or her stress-related anger and avoid the negative consequences of high arousal, (3) learning to use one's own arousal as a cue for non-antagonistic coping strategies will increase the probability that stress-related anger will be effectively regulated, (4) perceptions of being in control of a situation in which a provocation occurs will decrease the probability of stress-related anger arousal and increase the probability of positive coping behavior, (5) a person will increase his or her use of non-antagonistic coping behavior as well as more effectively regulate the arousal of stress-related anger as he or she experiences success for having done so, and (6) teaching the control of tension and arousal states through relaxation training will increase the probability that stress-related anger will be regulated. The two treatment conditions were chosen for the study because each condition emphasized a different type of coping strategy for stress-related anger.

Stress inoculation training (SIT) is a cognitive-behavioral approach developed by Meichenbaum and his colleagues (Meichenbaum, 1975; Meichenbaum & Cameron, 1983; Meichenbaum, 1985). SIT is a multilevel coping skills method that incorporates the transactional model of stress and coping. The role of cognitive factors in the generation and

maintenance of stress-related anger is emphasized in this approach. All treatment visits were small group sessions (3-5 students) of approximately 50 minutes in length. In contrast, subjects selected for the progressive relaxation training (PRT) condition were informed that stress and anger reactions were related to states of tension, and they were told that training in relaxation skills would enable them to identify signs of arousal and to cope with provocation by substituting a relaxation response for stress-related anger. The students were further instructed that it was the sense of competence in being able to relax that was important. All sessions were conducted in small groups (3-5 students) of approximately 50 minutes in length. Finally, participants in the waiting-list control (W-LC) condition were told that due to the number of volunteers a lottery was used to determine who would receive training first. They were informed that they would have an opportunity to receive training at some later date. This group met on the same pre-, post-, and follow-up days as the treatment groups, at which time the self-report and physiological data were obtained. No other formal contact with this group was established during the duration of the study.

Subjects were selected from among the work adjustment clients at the Woodrow Wilson Rehabilitation Center. There were a total of 55 subjects selected and assigned at random to the two experimental groups and the control group. Pre-intervention data were available on all of the 55 subjects. Post-intervention data were available on 40 subjects, with 14 in each of the two experimental groups and 12 in the control group.

Measures of occupational stress-related anger were administered to subjects before and after treatment to evaluate changes in the treatment group's level of stress and coping strategies. The dependent variables were chosen in order to represent three classes of strain responses: psychological (self-report), physiological, and behavioral. A 3x2x3 repeated measures design was utilized to determine whether or not the three factors of interest (treatment condition, disability group and time) interact.

The following research questions were proposed for investigation and were directed at the first-order and second order interactions. They will serve as a framework for summarizing the findings and conclusions.

1. What is the differential effect of the three treatment conditions (SIT, PRT and W-LC) across time (pre-, post- and follow-up assessment)?
2. What is the differential effect of the three treatment conditions across time accounting for the disability group factor (MR and EH)?

Correlational analyses were computed to determine the magnitude of relationships among the dependent measures at pre-treatment. It was concluded that the correlations between the physiological, self-report and behavioral measures were generally low and consistent with findings reported in the research literature. The results also suggested that the physiological measures of closely related functions (systolic and diastolic blood pressure) had higher correlations than the correlations between different autonomic systems (blood pressure and pulse rate).

Correlations between self-report measures of anxiety and distress and the ratings of coping behaviors were generally significant and in the expected direction. A particularly interesting finding of this study was the lack of a significant correlation between the self-report ratings of anger and the three coping strategies.

The 3x2x3 multivariate analysis of variance with repeated measures indicated no significant main or interaction effects for any of the three factors. It was, therefore, concluded that the interaction of treatment with time, and treatment with time accounting for disability did not significantly effect the work adjustment students' stress and anger scores for the selected dependent measures. Due to the exploratory nature of the study, however, the data were further explored using a 3x2x3 univariate analysis of variance with repeated measures for each of the eleven dependent measures. A number of variables (Diastolic Blood Pressure, Trait-Anxiety ratings, Verbal Antagonism ratings and Physical Antagonism ratings) had significant main effects that were associated with the three testing periods (Time effect) but were not involved in treatment effects or interactions. It was concluded from the Tukey HSD post hoc analyses that for the total group, there was a significant reduction in Diastolic Blood Pressure from pre-treatment to post-treatment, a significant reduction in self-report scores for Trait-Anxiety from post-treatment to follow-up, and a significant reduction in self-report scores for Verbal and Physical Antagonism from pre-treatment to follow-up.

Results of the univariate analyses also indicated that two variables (State-Anxiety ratings and Anger Self-Report ratings) had significant main effects that were associated with the three treatment conditions (Treatment effect). It was concluded from the Tukey HSD post hoc analyses that subjects in the PRT condition reported significantly less State-Anxiety than did subjects in the SIT and W-LC conditions. It was also concluded that subjects in the SIT condition reported significantly higher ratings of Anger for the imaginal provocation than did subjects in the PRT condition. These results need to be viewed cautiously, however, since they are a function of initial differences noted at pre-treatment.

Results of the univariate analyses further indicated that two variables (Trait-Anxiety ratings and Constructive Action ratings) had significant Disability x Time interaction effects. It was concluded from the results of the simple-main effects and subsequent Tukey HSD post hoc analyses that there was a significant reduction in Trait-Anxiety ratings between pre-treatment and follow-up for the MR students. The results also indicated that at the follow-up assessment period, the MR group's mean was significantly lower than the EH group's mean on this measure. It was concluded that the interaction associated with the Constructive Action ratings was a function of initial pre-treatment differences and that any interpretations regarding this interaction would need to be made cautiously.

Discussion and Implications

Issues Pertaining to Treatment Conditions

The absence of significant Treatment x Time interactions on the physiological, self-report and behavioral measures presents a disappointing picture and precludes extensive discussion of the relative effectiveness of the different treatment conditions. The most straightforward conclusion to draw from this finding is that the two active treatment conditions failed to demonstrate their superiority over the Waiting-list Control condition on most of the stress and anger measures and calls into question the absolute effectiveness of the program.

However, several explanations exist which would account for the ambiguous and nonsignificant Treatment x Time interactions. It should be noted, however, that these factors are purely speculative, as the design of the study does not permit unequivocal interpretations. Previous research (Novaco, 1975; Schlichter & Horan, 1979; Conaway, 1982; Fleming, 1982; Feindler, 1979) has demonstrated that relaxation and cognitive-behavioral approaches to stress and anger management were effective in the reduction of physiological and emotional arousal. Careful consideration of several of the differences between the preliminary research and the current study suggests some of the factors that may have led to the discrepant results.

In the previous research, like in most other studies of anger, females were generally excluded due to their differences from males with respect to anger (Moon, 1982). In the present study, 50% of the subjects were female and the effect of this variable on the results of this study was not investigated. In the general population, males

typically score higher on measures of anger. Moon (1982) contends that if in fact male and female anger is found to be different, then it would be quite reasonable to expect treatment strategies which are effective for males would be less effective or detrimental for females.

A second difference between the previous research and the present study centers on the differences in initial levels of anger reported by the subjects. In Novaco's (1975) study, for example, the subjects had a mean pre-treatment self-report Anger rating of 5.25, and a mean pre-treatment self-report Constructive Action rating of 2.81. In contrast, the subjects in the present study had mean pre-treatment scores of 3.08 and 4.60 for self-report Anger and Constructive Action, respectively. Thus, the subjects of Novaco's study tended to report greater amounts of anger and a lower likelihood for constructive action initially (as measured by the two indices) than did the participants of the present study. It could be argued that the subjects with higher anger and lower constructive action scores were experiencing greater discomfort and, therefore, were more motivated to learn more effective coping skills. This explanation has some credibility when it is recalled that the subjects in the present study were inconsistent in their efforts to document their level of compliance with the homework assignments. As a result of this finding, the potency of the active treatment conditions was called into question.

Support for the above explanation comes from the research of Lazarus and his colleagues (Lazarus & Folkman, 1984b) regarding the concept of

appraisal and why it is essential to a theory of psychological stress and coping:

> The degree of stress a person experiences depends on how much of a stake he or she has in the outcome of an encounter. If the encounter seems to have no relevance for the person's well-being, then the primary appraisal will be that it poses no threats, has done no harm, or offers no significant prospects for gain. On the other hand, if the person has something at stake in the outcome, the primary appraisal will be that the encounter does pose a potential threat, harm, or challenge, depending on coping resources and options (secondary appraisal)(p. 315).

This interpretation bodes poorly for primary prevention, unless as Bandura (1969) suggests, potent incentives for change are available within the immediate environment. For the subjects in the present study, there may not have been sufficient evidence of negative reinforcement (e.g., removal of acute anger and distress) nor positive reinforcement to "motivate" participants to change their behavior. A component that was lacking in this study was a set of contingencies to effectively shape and maintain the use of SIT and PRT techniques. Work adjustment instructors were kept blind to treatment condition because of their role as raters. Since they did not know the content of the students' therapies, they were unable to encourage the use of the newly introduced coping strategies in vivo. Though the above discussion must remain at the speculative level, it has clear implications for future research in this area.

A third difference between the previous research and the present study focuses on the setting for the investigation. The previous research has concentrated on the reduction of stress/anger in residential, delinquent adolescents. Again, it could be argued that the

dnlinquent subjects residing in residential facilities were experiencing greater discomfort and, therefore, were more motivated to learn more effective behavioral and other coping skills. This explanation loses some of its credibility when it is recalled that students who were emotionally handicapped were included in the present study and had the highest dropout rate. However, this finding does not rule out the latter interpretation when one considers that students with serious behavioral problems (i.e., delinquents) are usually not candidates for participation in the work adjustment program.

Finally, the way in which the program was delivered differed between the previous research and the present study. In the earlier studies, treatment sessions were conducted individually with the participants; whereas the intent of the present study was to adapt PRT and SIT procedures to a group format. This more rigid presentation format may have detracted from the treatment impact. Tailoring the program by presenting only those skills most likely to be of use to the individual might heighten the program's impact on stress. However, this is only speculation at this time. Moreover, it was not determined in the present study whether or not the participants mastered the coping skills they were taught. Without this information, it is difficult to judge the effectiveness of the SIT and PRT conditions. Bandura (1977) contends that expectations of personal efficacy are altered most readily by personal mastery experiences arising from performance accomplishments. Perhaps this would have been an easier task for content presented during individual treatment sessions rather than that

presented in a group format. This would seem to have important implications for future research in this area.

There are, no doubt, other plausible explanations for the lack of group differences noted in the present study. Treatment sessions were conducted twice per week for a total of 10 sessions. It is possible that the length of the two treatment programs was not long enough to ensure the mastery and generalization of the SIT and PRT techniques. Meichenbaum (personal communication, November 1, 1985), for example, states that recent evidence indicates that the length of SIT has been found to be a significant factor in treatment success with small groups and that 20-24 sessions seems to be the most effective. Whether or not additional sessions would have resulted in group differences remains at the speculative level, yet it has important implications for future research if the impact of these treatment conditions are to be fully understood. This may be a particularly important consideration for subjects of below average cognitive functioning. It is likely that the lower I.Q. levels preclude adequate conceptualization and internalization of various self-control and stress management techniques and that additional treatment sessions may be able to address this issue.

Another possible explanation for the lack of group differences may have resulted from the nature of the Work Adjustment program itself. The Work Adjustment program incorporates a variety of behavioral mangement techniques which have been developed to assist students in achieving program objectives. A review of the operationally defined

program objectives found in Appendix B clearly indicates an overlap of goals between the Work Adjustment program and the present study. In particular, the following three work adjustment objectives were identified as potential sources of stress-related anger in the present study: (1) responding to correction, (2) peer relations, and (3) staff relations. The finding of a significant Time effect for four of the dependent measures lends tentative support for the conclusion that the Work Adjustment program, itself, had a positive therapeutic effect. This was perhaps most noticeable on the self-report ratings for Verbal and Physical Antagonism. That is, subjects in the control condition may have benefitted from their exposure to the work adjustment program since the goals of the program are directly related to the reduction of aggressive behavior.

Finally, although there was a lack of group differences across time, a couple of additional observations are of interest. First, although only tentative conclusions can be drawn, the control group had the highest dropout rate (37%) when compared to the PRT (26%) and SIT (18%) conditions. The reason for this is only speculative, but it could be argued that the students in the two experimental conditions benefitted from their experience and were better able to cope with the stress of the work environment as a result. Second, although students in the SIT condition had significantly higher ratings of anger at pre-treatment, their ratings for the Construction Action coping strategy at post- and follow-up assessments were not significantly different from the other two groups. In other words, the students in the SIT condition rated

themselves relatively high in anger but nonetheless felt that they would cope constructively during the imaginal provocation.

Measurement Issues

In interpreting the finding that there were no between-group differences on the majority of the measures, it is necessary to consider the possibility that changes did occur but the assessment techniques employed were not sensitive to these changes. There are two sets of problems related to assessment which may in fact have contributed to such measurement difficulties in the present study. The first set has to do with the precise identification of the events to be measured, while the second set pertains to the limits encountered on individual measures.

From its conception the present study has been plagued by the issue of measuring two constructs, stress and anger. There has been continued criticism of the stress concept and its utility based primarily on the fact that it is defined confusingly as a stimulus or response, at any of three levels of analysis: physiological, psychological and social. Lazarus (1966), in his formulation of the transactional model of stress, further stated that stress is not a variable but rather a rubric consisting of many variables and processes.

Scrutiny of the assessment instruments raises the question of whether they would indeed measure the expected effects of the Stress/ Anger management program, particularly the SIT which is based on the transactional model of stress. Process-oriented measurement is concerned with how people appraise their ongoing transactions with the

environment and how they cope with the flow of events. Process-oriented measurement refers to specific thoughts, feelings, and acts rather than to what a person reports he or she might or would do during the unfolding of events (Lazarus & Folkman, 1984b). The treatment conditions of the present study, however, were evaluated in terms of physiological, psychological (self-report) and behavioral response measures. This approach was undertaken due to financial constraints and because at the present time the research literature regarding process-oriented measurement is quite limited.

The specific-effects hypothesis suggests that treatment that is oriented to one of the following modalities will have the greatest effect on symptoms of that modality: cognitive treatments on cognitive symptoms, behavioral treatments on behavioral symptoms and somatic treatments on somatic symptoms (Woolfolk & Lehrer, 1984). Problem-solving and cognitive strategies are important coping techniques which are taught and rehearsed during the skills acquisition component of SIT. It is possible that the assessment techniques employed in this study were not sensitive to these changes. The way the study was designed, the three coping strategies (Verbal Antagonism, Physical Antagonism, and Constructive Action) provide some information on how the subjects think they would respond, but leaves unanswered how they would actually cope in an encounter with an angry supervisor. Although speculative, the subjects in the SIT condition may have been able to generate a significantly higher number of alternative courses of constructive action than subjects in the PRT and control conditions.

In addition, with the exception of the self-report ratings for Anger, the subject's cognitive expectations and appraisals were not directly assessed.

It is interesting to note that the Anger ratings were not significantly correlated with any of the coping strategies at pre-treatment. This suggests that subjects lacked an awareness of their level of anger and how it might influence their subsequent behavior. For example, it was not uncommon for a student to rate the degree to which the imaginal provocation made him or her feel angry as very little, then rate the degree he or she would want to tell the person off and start an argument as much. In retrospect, the measures utilized within the present study may have been reliable, valid indices of only partially relevant events.

The second category of measurement problems is related to the psychometric properties of the individual measures employed. This is particularly true of the self-report measures in an area such as stress and anger, where there have been few attempts to develop new assessment instruments, and little opportunity for validation of existing instruments with handicapped individuals of limited cognitive ability. Because of this reality, the experimenter relied on self-report measures with little published data to support their validity with the population in question (e.g., State-Anxiety Inventory). In addition, four measures were utilized to provide information about cognitions and anticipated behaviors during anger-provoking situations within the work setting (Anger Self-Report, Verbal and Physical Antagonism, and Constructive

Action). These measures have no normative data or validation except their correlations with other measures at pre- treatment, which was reported in Table 4.1.

Aside from these necessary confines, unanticipated events raised questions about the accuracy of the behavioral measure (VARS). Staff turnover in the work adjustment program, as well as trial placement of students in the various vocational training programs at the Woodrow Wilson Rehabilitation Center, plagued the behavioral observations. Efforts to compensate with standard training may have only partially countered the bias of new raters at post-treatment. Finally, compliance in returning ratings was another threat overcome largely by repeated prompting by the experimenter and consistent support by supervisory staff.

To review, there are two types of problems which may have limited the usefulness of the measures used in evaluation of the SIT and PRT programs. The first is that the instruments used may not have been designed to meaure the subtle changes in the management of stress-related anger that may have resulted. The second is that problems with individual measures may have limited their reliability and validity. Besides known difficulties of using non-validated instruments, the experimenter encountered unexpected problems of staff turnover.

Methodological Concerns

Aside from factors specific to the treatment programs and the measures used for assessment, the findings were most likely affected by methodological difficulties common to clinical research conducted in

applied settings. A major source of concern was that the experimenter had virtually no control over other treatment programs the work adjustment students experienced during the study, including pharmacological treatments. In trying to accommodate ethical considerations, students in the control (as well as the PRT and SIT) conditions were entitled to the full-range of support services provided at the Woodrow Wilson Rehabilitation Center during the course of this study. In addition to pharmacological treatments, other potential support services included individual and group counseling. There was considerable variability in the extent to which each of these additional treatments were compatible with the SIT and PRT programs. Consequently, interpretation of overall findings is hindered by the fact that the experimenter lacked access to information about the content of the other therapies and lacked the power to coordinate them in any way with this study.

The treatments were tested with a true experimental design which suggests that all the typical threats to internal validity were controlled. However, a few internal validity threats are worthy of discussion. Students identified as having a primary disability of MR or EH, as operationally defined by the Department of Rehabilitation Services, were selected to participate in this study. Student records indicated, however, that 16 of the 40 subjects who participated in the study were diagnosed as having multiple disabilities. Although the students were randomly assigned to treatment conditions, the effect of these additional disabilities on treatment outcome is unknown.

Another general threat to internal validity that might help account for the lack of group differences results from the repeated-testing effect (Cook & Campbell, 1979). When expecting a stressful event, a person can facilitate anger control through self-instruction to remain calm and in control. The cognitive strategy of preparing for such provocations was a coping skill taught to subjects in the SIT condition. However, due to the repeated nature of the testing sessions, it can be argued that subjects in all three conditions learned how to prepare for the imaginal provocations on their own. The significant reductions noted on the Verbal and Physical Antagonism ratings for the total group lends some support for this explanation.

Cook and Campbell (1979) describe three additional validity threats that can have the effect of equalizing treatment and control groups. They note that "when an experiment is obtrusive, the reaction of a no-treatment control group or groups receiving less desirable treatments can be associated with resentment and demoralization, as well as with compensatory rivalry" (p. 55). As noted earlier, the students in the Work Adjustment program had the opportunity to participate in a variety of support services which were in addition to the treatments provided in the present study. Moreover, the students were able to earn additional points which could be exchanged for tangible goods through these other contacts. Consequently, compensatory rivalry and resentful demoralization were not felt to be in effect for the present case. However, one cannot completely rule out such an effect for the self-report measures.

The third validity threat described by Cook and Campbell which can have the effect of equalizing treatment and control groups pertains to the diffusion or imitation of treatments. In the present study, the most probable of the three validity threats described by Cook and Campbell (1979) is that the treatments were diffused to or imitated by the control subjects. Although treatment subjects were asked not to talk about the training or share their materials with their co-workers, some of whom were control subjects, it is safe to assume that some of them probably did. The extent of this sharing or diffusion is not known, but given the nature of the training it is highly unlikely that such discussion would actually constitute diffusion of the treatments.

Finally, the experimenter conducted both treatment groups which created the possibility of unintentional bias due to knowledge of the research hypotheses. This situation was dealt with by conducting the groups in strict adherence to detailed treatment protocols. Motivation and compliance levels of the two treatment groups were also assessed on different occasions to investigate possible changes in these dimensions as treatment progressed. Subjects in the PRT and SIT groups were similar in their compliance levels concerning completing homework assignments. The possibility of therapist bias appears unsupported by the findings.

Strengths of the Study and Implications for Practice

In a special edition of the American Psychologist, Forsyth and Strong (1986) recently reviewed the difficulties clinicians face in attempting to adhere to a scientist-practitioner model in applied

settings. This topic was also thoroughly addressed by Barlow, et al. (1984). The most salient strength of the present study is that it attempted to bridge the gap between clinical practice and empiricism, and determine the efficacy of stress and anger management techniques with a clinical population that has been largely ignored. This effort met with obstacles which diminished both the utility of the treatments and the integrity of the evaluation. Nevertheless, these limits do not negate the utility of the study as a whole.

In spite of its shortcomings, this study stands out as one of the first attempts to assess the efficacy of group Progressive Relaxation Training and Cognitive-Behavioral group therapy for the management of stress-related anger in handicapped individuals engaged in pre-vocational training. Unlike a number of clinical treatment studies, the present study adapted PRT and SIT procedures to a group format for investigation. The group format facilitated roleplays of stressful situations for the members of the SIT group. Furthermore, the fact that individuals ranging in age from 16-22 with a mean I.Q. of 71 completed the procedures suggests that adolescents and adults with below average cognitive functioning can benefit from stress and anger reduction training.

Among investigations attempting to evaluate Anger management programs or other cognitive and relaxation therapies, the present study is unusual in its nature and range of assessment techniques. A multifaceted assessment procedure was utilized to represent three classes of strain responses: physiological, psychological (self-report)

and behavioral. Few investigators have included behavioral observations among their measures. While there were limits to the validity of the present study's behavioral ratings, they represented a significant attempt at gaining external validation information. Vocational behaviors were assessed in the Work Adjustment setting by individuals (instructors/supervisors) who had regular contact with the student.

Other than the previously mentioned criticisms, this study was reasonably well-controlled. All subjects were pretested and posttested in the same room with the same experimenter and assistants. The assistants were blind to the treatment condition of the subjects. The experimenter conducted both treatment groups in strict adherence to treatment guidelines. All training sessions were held in the same room equipped with a large central table, blackboard, and other items necessary for each session. There were no external distractions at any time during the sessions, and all sessions lasted from 45-50 minutes. Each treatment session had from 3-5 members in attendance.

The results of the present study clearly indicated that students with severe emotional problems experienced a higher probability of terminating their Work Adjustment programs prematurely when compared to the mildly retarded students. This is consistent with previous findings which suggest that traditional approaches to serving this population have resulted in a low level of success to vocational rehabilitation (McCue & Katz-Garris, 1983). Clearly, prevention activities and early interventions with populations identified as being at-risk of job failure are the goal of mental health care professionals. The mental

health field will need to continue to expand its services and include a concern for the vocational needs of emotionally handicapped individuals. Work produces one of the major sources of stress known to man (Jaremko, 1984).

The most important goal of preventive approaches is the development of competence and adaptive capacities for an identified population (Parsons & Meyers, 1983). Handicapped adolescents and young adults need problem solving and coping skills as they make the transition from the school environment to the work setting. Special educators, vocational educators and mental health practitioners need to work together to build these skills into the curriculum so that handicapped students can better manage their stress and cope more effectively with their emotions (such as anger). This study offers some tentative evidence that relaxation and cognitive-behavioral therapy were helpful to the mildly retarded and emotionally handicapped youth who participated in the research program. Due to the differential mortality rate, it appeared that the students in the SIT and PRT conditions were better able to cope with the stress of the work environment.

Recommendations for Future Research

Conclusions from this research study lend themselves to further investigation and substantiation with the population of mildly retarded and emotionally handicapped youth in vocational settings. In addition to increasing the number of treatment sessions, future studies could provide for ongoing immediate reinforcement for rehearsal and successful application of stress management skills in vivo. Verbal reinforcement

from vocational instructors/supervisors could be directed both at the rehearsal of coping techniques in stressful situations and the successful curbing of maladaptive behaviors.

The lack of compliance regarding homework assignments and other self-monitoring procedures is worthy of future investigation. The self-monitoring component of SIT is a procedure used to help educate the individual about the transactional nature of stress and coping (Meichenbaum, 1985). Novaco (1975) has found the anger diary to serve multiple functions: (1) encourage the individual to monitor his or her anger reactions, (2) provide a means of learning to discriminate different levels of anger responses to situations, and (3) provide concrete clinical examples to be used in therapy. Subsequent research will need to make improvements in the self-monitoring format, as well as more consistently emphasize to students the importance of its contribution to treatment. This is particularly true for individuals with below average cognitive functioning. Moon (1982) found that performance feedback was important to the care and attention the subject gave to the anger diary.

Another consideration for future research in the area of anger management involves the mode of provocation by which the individual is required to respond. In the present study, subjects were assessed using multiple measures following the presentation of imaginal provocations. Novaco (1975) found that the mode of provocation (imaginal, role play, direct experience) was an important determinant of anger for a number of indices with adults having chronic anger problems. The implications of

this finding have particular importance for individuals who are cognitively limited. One individual in the present study, for example, claimed that she was not angry following the presentation of the imaginal provocation because "It didn't happen to me!" Direct provocation encounters and/or in-vivo role-plays would be expected to pose a greater threat to the person's well-being. That is, face to face interactions would have a higher probability of eliciting the most likely coping behavior for an actual provocation.

Improvements in data collection methods will also extend the parameters of stress-related anger research. Obvious additions include reliability checks on self-monitoring data, improved measures in the domain of psychophysiology (e.g., catecholamine secretion), and increased follow-up. Lazarus and Folkman (1984b) argue that "many adaptational outcomes take time to emerge--days, weeks, months, even years. The few seconds or minutes that comprise most experimental periods are clearly insufficient for observing appraisal and coping processes that eventuate in short-term, let alone long-term, outcomes" (p. 302).

Additional dependent measures may provide assessments of actual coping behaviors during exposure to stressful situations and validate specific behavioral change. It would be desirable in future research to juxtapose self-reported portrayals of threat and challenge with direct behavioral indices of anger. Novaco (1975) and Moon (1982) have suggested that non-verbal behaviors such as the following be incorporated: observations of exaggerated staring behavior, deep, rapid

breathing, clenched teeth, strained facial muscles, clenched fists, peculiar body posture, amplitude of verbalizations, etc. Changes in these data would certainly enhance the generalization and long-term maintenance effects of behavioral changes in this pre-vocational population. Job performance appraisal procedures are predictable, repetitive, and naturally-occurring stressors in the work environment. By taking baseline and post-intervention data during these evaluation periods, one could assess the use and effectiveness of the individual's coping skills.

A final area of future research should include a component analysis of the various cognitive-behavioral and relaxation techniques taught in the stress/anger management program to determine differential effectiveness. It may be possible that certain procedures are more effective with certain categories of handicapped adolescents and young adults. This may relate to cognitive abilities or other mediating variables. Future research should attempt to examine these mediating variables in more detail and determine what role they play in the transactional process. Witmer et al. (1983), for example, identified several constructs that were used to discriminate significantly between good and poor copers. The psychosocial constructs included self-esteem (composed of self-worth and self-efficacy), external control, life pace, irrational beliefs, social support system, and job-life meaning. The researchers concluded that these constructs may intervene as mediators in the transaction between life stressors and the stress response.

Replicating this study with a sample of mildly retarded and emotionally handicapped students engaged in pre-vocational (work adjustment) training is essential to determine the efficacy of the intervention program. This replication should include the modifications recommended for presenting stress and anger management procedures to handicapped youth making the transition from school to work.

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APPENDIX A

WOODROW WILSON REHABILITATION CENTER (WWRC)

LETTERS OF SUPPORT FROM WWRC

Woodrow Wilson Rehabilitation Center

This comprehensive vocational rehabilitation center was the first comprehensive center of its kind in the nation and continues to be one of the nation's outstanding rehabilitation facilities. No facility in the region and few nationally, offer as complete a range of services as WWRC. To assist clients in the rehabilitation process, a wide range of services are offered by WWRC including rehabilitation counseling; vocational and psychological evaluation; work adjustment training; physical, occupational and recreation therapy; a broad range of rehabilitation medical treatment; speech therapy; audiological evaluation; prosthetic and orthotic clinic; rehabilitation engineering services; and psychological and psychiatric support treatment. Vocational training is offered in approximately twenty-five occupational areas, including computer programming and data processing; auto mechanics and body repair; electronics assembly and electronic technician training; business education; woodworking and refinishing; small engine repair; industrial sewing and upholstery; food service, janitorial; and a variety of nurse-aide and home health care occupations. In addition, the Center's Vocational Training Division offers extensive remedial academic training designed specifically to meet the client's vocational training needs. In addition to the above, specialized training and remediation programs are provided for deaf, brain injured, and spinal cord injured persons as well as established applied and evaluation research, staff development, and research utilization service components.

COMMONWEALTH of VIRGINIA
DEPARTMENT OF REHABILITATIVE SERVICES
COMMISSIONER
WOODROW WILSON REHABILITATION CENTER
FISHERSVILLE, VIRGINIA 22939
DIRECTOR, W.W.R.C.

December 10, 1984

Mr. Joseph F. Salwan
College of Education
Virginia Tech
Blacksburg, Virginia 24061

Dear Mr. Salwan:

It is my pleasure to support your efforts regarding the proposed stress reduction project for the Work Adjustment clients at the Woodrow Wilson Rehabilitation Center of the Virginia Department of Rehabilitative Services.

The successful transition from school to work is of primary importance for many of the handicapped students that we serve at the Center. Woodrow Wilson Rehabilitation Center is an ideal setting, both in terms of client population and resources, for conducting such a research effort. This project will most certainly provide valuable knowledge in the social adjustment and training of handicapped vocational students.

Please keep me informed of your progress in this endeavor.

Sincerely yours,

Director

KK/poe

COMMONWEALTH of VIRGINIA
DEPARTMENT OF REHABILITATIVE SERVICES
COMMISSIONER
WOODROW WILSON REHABILITATION CENTER
FISHERSVILLE, VIRGINIA 22939
DIRECTOR, W.W.R.C.

December 10, 1984

Mr. Joseph F. Salwan
College of Education
Virginia Tech
Blacksburg, Virginia 24061

Dear Mr. Salwan:

I am pleased to write a letter of support for your proposed research project at Woodrow Wilson Rehabilitation Center. The Work Adjustment Training program of WWRC is an ideal setting for conducting a post-secondary project such as your's. Many of our students have had considerable difficulty making the transition from school to a work environment.

I feel that your proposed research project is responsive to our students needs, and I would be happy to support your efforts any way I can.

I look forward to working with you.

Yours truly,

Rehabilitation School Authority
Principal
Supervisor, Work Adjustment

RW/poe

APPENDIX B

WORK ADJUSTMENT PROGRAM OBJECTIVES

CLIENT RECORD FORM-BEHAVIOR MODIFICATION PROGRAM

WORK ADJUSTMENT PROGRAM OBJECTIVES

RIBBON AWARDS

A. Purpose
When objectives are met, ribbons will be awarded which symbolize students' achievements. Each ribbons is of different color indicating a specific program objective. Ribbons are earned and worn by students on their work clothing daily.

B. Awarding
A ribbon will be awarded when a student achieves five consecutive work days with a minimum of a three rating for that objective. (See Group Movement and Ribbon Criteria)

C. Maintaining
Once a student has obtained a ribbon, consistent, acceptable ratings (3 or 4) must be maintained.

D. Forfeiting
If an earned objective is rated two or less, more than one time within five working days, the ribbon for that objective will be forfeited. A behavior contract/plan will be initiated within two working days to outline a plan to re-earn the objective (ribbon). A warning will be given following the first rating of 2.

E. Ribbon Criteria
ON TIME
Be on time in the morning (8:15), after morning break, after lunch (12:45) and after the afternoon break. Students who take daily medication must pick up each dose on time. Students must also be on time to and from scheduled classes and appointments.

4 - When a student is in the work area at his work station, has his tools and has put on his work coat, ready to begin working at the scheduled time. Student is on time for all classes, appointments, and medications.
3 - When a student is in the work area, punched in, getting his work coat on, but not at his work station at the scheduled time. Student is on time for all classes, appointments and medications.
2 - When a student is late once by ten minutes or less during the day for work, class appointments, or Tuesday recreation.
1 - When a student is late more than once and/or time loss is more than ten minutes for work, class or any appointment in one day.

Medication: If student is late and/or misses picking up medications, the assigned rating for on time is lowered by two steps.

HYGIENE
Student must look clean and neat; not have any offensive odor; must wear clean, wrinkle free clothes; have clean, neatly combed hair; and be clean shaven unless growing a beard or mustache, which will be trimmed daily. Women may wear light makeup. Students must dress according to the approved Work Adjustment dress code.

4 - When a student looks clean and neat and has showered, has no offensive odor, has on clean, wrinkle free clothes, has clean, neatly combed hair, is clean shaven or has a trimmed beard/ mustache, and conforms to the Work Adjustment dress code.
3 - When a student has not taken care of one of the above named areas within the last 24 hours but appears to be appropriately groomed with the exception of the one area.
2 - When the student has not taken care of two of the above areas or has neglected one area for two consecutive days, or has an offensive odor.
1 - When a student has not taken care of three of the areas listed above or has neglected one area for more than two days.

ON TASK
When a student is in the physical motion of any step involved towards the completion of the assigned task, and at the assigned work station.

4 - When a student performs 95% or above on task and takes no extra breaks.
3 - When a student performs 90% or better on task or takes one additional break a day.
2 - When a student performs 80-89% on task.
1 - When a student performs 79% or below on task.

FOLLOWING INSTRUCTIONS
Beginning and following through on directions or requests from a staff member or instructions given by other students assigned to teach a job. This also includes following rules and regulations around the Center and the daily routine.

4 - When a student requires no repeating of instructions or requests and conforms to daily routine.
3 - When a student requires instructions or requests repeated once or twice or needs no more than one prompt about daily routine.
2 - When a student requires instructions repeated three times or if the student requires instructions or requests repeated twice and displays poor listening behavior (i.e., interrupting, yawning, not watching what is being modeled, etc.) or receives a Group III offense on the previous night's night report for not following instructions; or requires more than one prompt about the daily routine.
1 - When a student requires instructions or requests repeated four or more times; or when a student requires instructions

repeated three or more times and displays poor listening behavior or receives a Group II offense on the previous night's night report for not following instructions.

WORK SPEED

A student who has good work speed will perform assigned tasks at speeds previously determined to be acceptable (norm). The student will work at a consistent rate insuring accuracy and quality on the job assigned. The individual student's potential will be considered.

4 - When a student's work speed meets a minimum of 80% of the norm for an assigned task and is at least 75% accurate.
3 - When a student's work speed meets a minimum of 75% of the norm for an assigned task and is at least 75% accurate.
2 - When a student's work speed meets a minimum of 65% of the norm for an assigned task and is at least 75% accurate.
1 - When a student's work speed is below 50% of the norm for an assigned task and/or is below 75% accurate.

SAFETY

Using safety equipment and tools as instructed. This includes safety practices such as not engaging in "horseplay" or other unsafe acts which might endanger that student or others.

4 - When a student uses safety equipment and tools as instructed and follows all safety practices without reminders.
3 - When a student uses safety equipment and tools as instructed and follows all safety practices with one or two reminders per continuous task assignment.
2 - When a student requires three or more reminders on safety equipment and tools per continuous task assignment or engages in horseplay or other unsafe acts.
1 - When a student refuses to use safety equipment or tools as instructed or has an accident as a result of not following safety rules.

RESPONDING TO CORRECTION

Students who can respond to correction will be able to accept the responsibility for their behavior. Students who are corrected will be rated on how well they respond to the correction.

4 - When students respond to positive and negative feedback without displaying any disruptive behaviors, ask questions and make comments appropriately, and actively take responsibility for their behavior.
3 - When students respond to positive and negative feedback concerning performance, without responding verbally, respond without displaying disruptive behaviors, and acknowledge responsibility for their own behavior.

2 - When students respond by attempting to engage in inappropriate discussion or arguments, or receive a Group III offense on the night report for inappropriately responding to correction.
1 - When students respond to correction by acting out (displaying obvious overt negative behaviors), or receive a Group II offense on the night report for inappropriately responding to correction, or require counselor intervention.

PEER RELATIONS
A student who demonstrates good peer relations will have positive interactions with other students and will cooperate with others as appropriate without distracting other students from appropriate work performance.

4 - When a student initiates interaction with co-workers in a positive and appropriate manner, as stated above.
3 - When a student exhibits behaviors in the above manner with prompting.
2 - When a student avoids interaction with other students or interferes with another student's work performance; or displays inappropriate affection in the work area; or engages in teasing, picking, or arguing one time during the day; or receives a Group III offense on the night report for inappropriate peer relations, or requires special co-worker selection.
1 - When a student displays negative or inappropriate behaviors such as teasing, picking, or arguing two or more times; displays verbal or physical aggression towards others, or receives a Group II offense on the night report for inappropriate peer relations.

STAFF RELATIONS
A student with good staff relations will use appropriate interactions and ask questions when necessary; does not seek special favors or attention; will ask work related questions and comments during work hours; and non-work related questions and comments during non-work times.

4 - When a student initiates all of the above.
3 - When a student does all of the above with prompting.
2 - When a student does not interact appropriately; or does not ask necessary questions; or asks unnecessary questions; and/or seeks special attention or favors; or receives a Group III offense on the previous night's night report for inappropriate staff relations.
1 - When a student is verbally or physically abusive to staff or receives a Group II offense on the previous night's night report for inappropriate staff relations.

WORK QUALITY

A student who has good work quality will perform assigned tasks at previously determined standards. The student will work at a consistent rate insuring accuracy and quality on the job assigned. The instructor will take the student's potential training area into consideration when rating this objective.

4 – When a student does not have to make any corrections per continuous task assignment.
3 – When a student has to correct work one time per continuous task assignment.
2 – When a student has to correct work twice per continuous task assignment.
1 – When a student has to correct work three or more times or damages the work product.

VOCATIONAL READINESS

The student must maintain the Group I and Group II ribbons for five consecutive days.

4 – When the student receives a minimum of a four rating in every Group I and II objective.
3 – When a student receives a minimum of a three rating in every Group I and II objective and/or is on a behavior plan or contract.
2 – When a student receives a 2 rating on any Group I or II objective.
1 – When a student receives a 1 rating on any Group I or II objective.

INITIATIVE

The student must be assertive enough to learn new things on his own and to try to improve techniques which he has not completely mastered. The student, too, must be helpful to others after completing an assigned task. The student does not initiate tasks using machinery they have not previously used here. The student does not initiate tasks using machinery unsupervised.

4 – When a student asks instructor for another task when his own work has been completed and he can find no other task to begin and has made an effort to do so; and/or assists others in performing their task when his own assignment has been completed.
3 – When a student asks instructor for another task when his original assignment has been completed and he has not made any attempt to find another task or help another student.
2 – When a student completes a task and then stands or sits waiting for another assignment instead of looking for work.
1 – When a student does not find work and offers numerous excuses for not working and/or uses all his energy to get out of work.

WORK TOLERANCE
Student demonstrates the ability to withstand a full work day and stays on task, demonstrates acceptable work stamina, and the ability to perform difficult tasks without complaining. It will also be necessary for the student to maintain good work habits, good quality of work, and good interaction with co-workers. Body language will be considered in rating this objective as well as verbal responses.

4 - When a student can work all day without verbally complaining or displaying body language indicating poor work tolerance (i.e., sighing, sitting to perform a task normally performed standing, etc.). Student must maintain quality, strive to complete a task without stopping because of break, lunch, etc.
3 - When a student can work on a task with only one complaint or action indicating poor work tolerance.
2 - When a student can work on a task but complains or reacts two times during the day, including excessive requests to leave work station.
1 - When a student can work on a task but complains/reacts three or more times.

WORK INDEPENDENTLY
Student independently completes tasks assigned and has followed initial instructions given and asks appropriate questions when it is necessary for instructions to be repeated for clarification. Student asks for work to be checked only after he is certain the task has been totally completed. Student attempts to thoroughly complete assignment.

4 - When student completes all steps of assigned task without any prompts from the instructor.
3 - When the student completes all but one step of an assigned task with one prompt from the instructor.
2 - When the student has not completed two steps of an assigned task and/or had to be prompted two times by the instructor.
1 - When the student has not completed three or more steps of an assigned task and/or had to be frequently prompted by the instructor.

READY FOR TRAINING
Student continues to maintain the objectives he has met in all three groups with a rating of three or above for a minimum of five consecutive days prior to entering a vocational training area or completion from the program.

4 - Student displays excellent performance in all objectives of the Work Adjustment program with a rating of four and has demonstrated appropriate behaviors (and skills where applicable) related to his chosen training program.

3 - When a student has demonstrated satisfactory performance in meeting all of the objectives of the program with a minimum of a three rating.
2 - When a student has completed and maintained all but one of the objectives in the Work Adjustment Program.
1 - When a student has completed and maintained all but two of the objectives in the Work Adjustment Program.

NOTE: If a student undergoes a trial training period, this ribbon will also have to be maintained during that time. If a student's behavior is such, as reported by the training instructor, that this ribbon should be forfeited, the student will not be eligible for completion of the program.

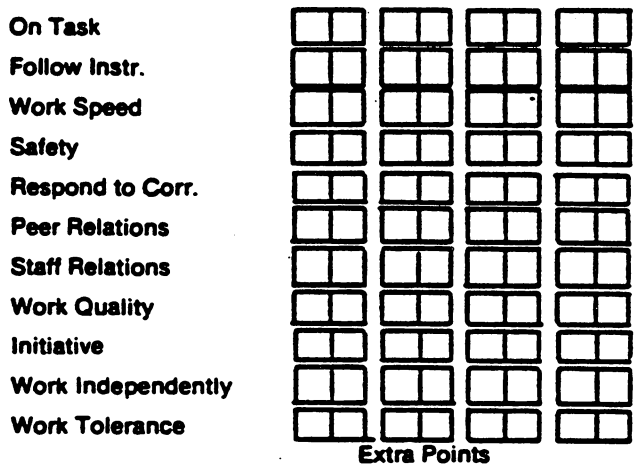
Work Adjustment Card—BASELINE

Name _____ Date _____

On Time 8:15 _____ am Break _____

12:45 _____ pm Break _____

Hygiene _____ Clean up am _____ pm _____



Counselor _____ _____

Instr. Class _____ _____

_____ _____

APPENDIX C

CONSENT FORM

Consent Form Distributed to Participants

By signing my name on the line below, I am agreeing to be involved in the special project that Mr. Salwan is doing with students in the Work Adjustment program. The special project is designed to help students better manage their stress and cope more effectively while on the job. I agree to meet with Mr. Salwan 13 times in the next eleven weeks to learn new things about reducing stress. I understand that our meetings will usually involve a group of 5 to 8 other students. I understand that my participation is completely voluntary, so I can withdraw from the program at any time. If anyone writes up reports about this project, my name will never be mentioned, and nothing will be said that would let someone know that it was me who participated. In other words, the things I say and do will be kept confidential.

At the end of every meeting, I will get 15 bonus points that can be exchanged for items sold in the Work Adjustment Point Store, or for other privileges such as time off. If for any reason I leave the meeting early, I will not receive the bonus points.

If I have any questions about the project, Mr. Salwan will answer them for me when it's all over.

I have read this form, or had it read to me, and I understand it.

Name _____ Witness _____

Date _____

APPENDIX D

IMAGINAL PROVOCATIONS

IMAGINAL PROVOCATIONS

The following scenes will be presented to the subject via an audio cassette tape player.

SITUATION 1: Criticism related to work quality

You're new on a job that you want to keep and do well on. But the boss has been criticizing you constantly since you started. What's worse is that he doesn't tell you how to do the job right. Sometimes when he criticizes you, he doesn't even tell you exactly what you did wrong. You're getting frustrated about this because he's chewing you out all the time but he isn't helping you learn your job. This morning the boss comes up and says, "If you're too lazy or thick-headed to figure out your job on your own, you won't hold a job here for long." (Adapted from Moon, 1982.)

SITUATION 2: Criticism related to initiative

You like your job but find that there never seems to be enough to do. What's worse, your boss criticizes you for not keeping busy. One morning while you're working with a few other people at your work station, your boss approaches you and says, in front of everyone: "Listen, you aren't doing your share of the work. I've noticed that you are a goof-off and spend too much time talking and joking around rather than working. If you don't want to do the work, I'll find someone else who does!"

SITUATION 3: Criticism related to work speed

You have recently begun a new project at work. Although you are trying to do the best job you can and work as quickly as possible, you notice that other people are able to work faster than you. One afternoon your boss comes up to you and says: "If you're too slow and uncoordinated to do the job right, you'll have to go. I'll find someone else who can handle the job!"

APPENDIX E

ANGER SELF-REPORT SCALE

Anger Self-Report Scale

I. Rate the degree to which this experience made you feel angry:

1.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

II. If this incident had actually happened to you, rate the likelihood that you would act in each of the following ways--that is, to what extent would each of these be true for you:

2. I would curse or shout.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

3. I would want to hit the person.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

4. I would stay composed and be constructive.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

5. I would want to pound or kick something.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

6. I would want to tell the person off and start an argument.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

7. I would try to understand the situation and keep cool about it.

1	2	3	4	5	6	7
not at all	very little	a little	some not much	fairly much	much	very much

NOTE: Adapted from Novaco, R. W. (1975). Anger Control: The development and evaluation of an experimental treatment. Lexington, Mass.: Lexington Books.

APPENDIX F

THERAPY SESSION OUTLINES

OUTLINE - STRESS INOCULATION TRAINING

SESSION 1

(1) Introduce group leader and get introductions of group members.

(2) Give the rationale of cognitive-behavior modification to stress/anger control.

(3) Assure that each member understands:

   a. the confidentiality of each session.

   b. the need to attend each session.

   c. the need to fully exchange ideas.

(4) Conduct a situation x person x mode of expression analysis of the stress/anger problems of group members.

(5) Homework - Maintain diary of job related stress/anger experiences which will include:

   a. the frequency of such experiences.

   b. the degree of stress/anger experienced.

   c. the degree of proficiency demonstrated in managing the situation.

OUTLINE - STRESS INOCULATION TRAINING

SESSION 2

(1) Review last session.

(2) Review homework assignments.

(3) Allow each member to examine the determinants of stress/anger arousal:

a. External Events - What particular aspects of situations trigger arousal (e.g., frustration, annoyance, insult, abuse, etc.)?

b. Internal Factors - Cognitive (appraisals, expectations, and self-statements); Affective (temperament, tension level and arousal patterns).

c. Behavioral factors - How does the individual typically respond when aroused or provoked in given situations (e.g., antagonism, avoidance, etc.).

(4) Homework - continue to maintain diary.

OUTLINE - STRESS INOCULATION TRAINING

SESSIONS 3-6

(1) Review previous sessions

(2) Review homework assignments

(3) Skills training:

a. Train instrumental coping skills (communication, assertion and problem-solving)

b. Train palliative coping skills (perspective taking, imagery-based attention-diversion strategies, and relaxation).

(4) Homework - Continue to maintain diary.

OUTLINE - STRESS INOCULATION TRAINING

SESSIONS 7-8

(1) Review previous sessions

(2) Review homework assignments

(3) Skills Rehearsal - Self-instructional training to develop cognitive mediators to regulate coping responses:

a. prepare for stressful provocations when possible.

b. experience the confrontation.

c. coping with arousal.

d. reflect on the experience.

(4) Homework - Continue to maintain diary.

OUTLINE - STRESS INOCULATION TRAINING

SESSIONS 9-10

(1) Review previous sessions.

(2) Review homework assignments.

(3) Application and follow-through: Induce application of skills (imagery rehearsal, role playing, in vivo).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSION 1

(1) Introduce group leader and get introductions of group members.

(2) Present the rationale of progressive relaxation to stress/anger control.

(3) Assure that each member understands:

   a. the confidentiality of each session.

   b. the need to attend each session.

   c. the need to freely exchange ideas.

(4) Administer self-rating scale (pre-test).

(5) Provide instructions regarding the relaxation procedure.

(6) Begin relaxation training of the 16 muscle groups.

(7) Administer self-rating scale (post-test).

(8) Homework: Daily practice sessions (complete checklist for PR practice sessions).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSIONS 2-3

(1) Review last session.

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Relaxation of 16 muscle groups.

(5) Administer self-rating scale (post-test).

(6) Homework: Daily practice sessions (complete checklist for PR practice sessions).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSIONS 4-5

(1) Review last session.

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Combine the 16 muscle groups into seven as follows:

a. Dominant hand, forearm, and upper arm.

b. Nondominant hand, forearm, and upper arm.

c. All facial muscles.

d. Neck.

e. Chest, shoulders, upper back, and abdomen.

f. Dominant upper leg, calf, and foot.

g. Nondominant upper leg, calf, and foot.

(5) Administer self-rating scale (post-test).

(6) Homework: Daily practice sessions (complete checklist).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSIONS 6-7

(1) Review last session.

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Combine the seven muscle groups into four as follows:

   a. Both arms and both hands

   b. Face and neck.

   c. Chest, shoulders, back, and abdomen.

   d. Both legs and both feet.

(5) Administer self-rating scale (post-test).

(6) Homework: Daily practice sessions (complete checklist).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSION 8

(1) Review last session.

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Begin releasing tension by recall (the four muscle groups are focused on individually).

(5) Administer self-rating scale (post-test).

(6) Homework: Daily practice sessions (complete checklist).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSION 9

(1) Review last session.

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Introduce "counting down" procedure with recall.

(5) Administer self-rating scale (post-test).

(6) Homework: Daily practice sessions (complete checklist).

OUTLINE - PROGRESSIVE RELAXATION TRAINING

SESSION 10

(1) Review last session

(2) Review home practice assignment and checklist.

(3) Administer self-rating scale (pre-test).

(4) Counting alone to achieve relaxation.

(5) Administer self-rating scale (post-test).

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