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The Effects of Autogenic Training in Reducing the Occupational Stress of Probate Court Juvenile Case-workers

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THE EFFECTS OF AUTOGENIC TRAINING IN REDUCING THE OCCUPATIONAL STRESS OF PROBATE COURT JUVENILE CASE WORKERS

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ABSTRACT

THE EFFECTS OF AUTOGENIC TRAINING IN REDUCING THE OCCUPATIONAL STRESS OF PROBATE COURT JUVENILE CASE WORKERS

By

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The purpose of this study was to investigate the use of autogenic training as a self-monitoring stress reduction technique within an occupational setting. It was hypothesized that autogenic training would produce a greater change in perceived stress and the reaction to stress than would progressive relaxation training, which served as the control.

Eighteen case-workers in the juvenile court system of Lansing, Michigan, were randomly assigned to the autogenic training or progressive relaxation training treatment group. The Life Experiences Survey (LES) served as the covariate while the state scale of the State Trait Anxiety Inventory (STAI) and individual blood pressure served to measure the outcomes.

Analysis revealed that autogenic training produces no greater change than progressive relaxation. Trend analysis revealed that subjects experienced, during the six-week training period, a variety of life changes that may account for the lack of over-all change in perceived stress.

An examination of suspected error sources includes the following: theory, sampling, design, instrumentation, treatment, and individual differences.

DEDICATION

To my Father and Mother,
who, for as long as I can
remember, allowed me to
follow my own path in
life, offering love and
support along the way.

and

To my wife, Jan,
who has shared
this experience with me,
figuratively and literally,
and who gave me
encouragement at those times
when I needed it most.
Thanks, hon.

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Bits and pieces of many individuals went into the completion of this work. Some helped with ideas, some with facts, some with work, and some with support. I would specifically like to thank the following people:

Dr. Bob Winborn, my academic advisor and friend, for his ideas and support which helped form the foundations for this investigation. Secondly, Ms. Claudia Sowa, a dear friend and colleague who, in the midst of her own work, took time to explain and help me understand what were for me difficult concepts, and whose super-human mastery of statistics and design has held me in awe since 1976. Ms. Barbara Reeves and Mrs. Jan Ellison, whose wizardry at the typewriter and incomprehensible patience with my handwriting made my life easier and expediated completion. Lastly, my doctoral committee members, Drs. Bob Winbor, Bruce Burke, Gary Stollak, and Alex Cade, who all offered suggestions, direction, support, and final approval.

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CHAPTER I

THE PROBLEM, RATIONALE, AND RELATED RESEARCH

Need

The need for the practice of stress-reducing behaviors exists because the effects of stress upon the physiological and psychological components of the human body are profound. From the physiological perspective, stress plays a part in virtually all illnesses; i.e., there is a psychosomatic factor present in the process of being ill (Pelletier, 1977); most easily recognizable to most people is the ulcer. An easily recognizable example of this concept is the ulcer, a condition that, in most cases, is totally psychosomatic in origin. More importantly, however, stress effects the physiological processes that are involved in the immunological system. While there is much uncertainty concerning the exact components by which stress affects this system, there is sufficient evidence to merit closer examination (Pelletier, 1977). Stein, Schiavi, and Camerino (1976) have examined the influence of behavior on the immunological system, and they conclude the following:

> It has been shown experimentally that psychosocial processes influence the susceptibility to some infections, neoplastic processes, and to some aspect of humoral and cell-mediated

> immune responses. These psychosocial effects may be related to hypothalmic activity. Reviewing the mechanisms that may be involved in immune responses indicates that there is no single mediating factor. Various processes may participate, including the autonomic nervous system and neuroendocrine activity (p.).

Thymus-derived cells destroy antigens by direct contact or by secreting toxins. This results in the end of the immunological response. The extent of the immune response to a given antigen depends on the number of pre-existing thymus-derived cells and bursal-derived cells which initiate the immune response. While the feedback connections of the body to the system are poorly understood, it is clear that the connections involve both physiological and psychological factors (Pelletier, 1977).

The individual psychological make-up of each person causes responses to stressful situations that are potentially unique to that individual in that situation. Some individuals experience a decrease in their attention span, or they become short-tempered, withdrawn, openly aggressive, depressed, overly-sensitive, or any of a variety of alternate manifestations.

Personality types have been shown to be good predictors of stress. The work of Friedman and Rosenman (1974) distinguished between "type A" and "type B" behaviors, each set of behaviors belonging to certain personality types. The type A personality is typically aggressive, extroverted, easily aroused to hostility, possesses an excessive competitive drive and a chronic sense of time urgency (Pelletier, 1977).

The latter two variables, according to Friedman and Rosenman (1974), automatically equal a type A personality which is subject to life-threatening illness as a result of stress. An interesting facet of the type A personality is the tendency to judge accomplishments and successes in terms of numbers (Pelletier, 1977). For example, success tends to be measured in the numbers of dollars earned, as opposed to personal satisfaction.

In contrast to type A, type B is typically free of the compulsive sense of time urgency. Type B does not measure him/herself against peers, nor is s/he likely to base ambitions on status or money but more on well thought-out goals. Type B also possesses the ability to relax for the sole purpose of relaxing, without guilt. Type B works for personal satisfaction.

Thus, the inability of people to cope with stress plays a role in both physical and psychological health. As the concept of stress is a relative recent innovation, the need for researching and developing means of assisting individuals to manage their stress is presently needed.

Mental health professions are considered to be high-stress occupations. The purpose of this study is to examine ways of reducing the stress associated with being a case-worker in the juvenile probate court system in Lansing, Michigan. Case-workers within this system experience the common occupational stressors emanating from labor-management relations. However, in conjunction with such stressors,

there exists the exposure to individuals (clients) whose life-histories generally consist of exposure to maladaptive behaviors and social experiences. In some instances, the behavior of these individuals is not predictably rational, and situations develop in such a manner that physical harm or a threat to physical safety becomes a potential outcome. A case in point was reported during the week of July 23, 1979, when a case-worker received a broken arm while transporting a youngster to the juvenile court. Examples of other such potential situations are: removal of children from homes, home visitations, and counseling interviews or sessions at the court. To confront these situations on a daily basis gives rise to stress and anxiety. Thus, there is a need for coping mechanisms for case-workers that they can use to manage this stress. This research was designed to study techniques that could permit individuals to self-monitor and self-regulate physical and emotional reactions to stress.

Hypothesis

It was the intention of this study to investigate the hypothesis that case-workers who receive autogenic training will display less stress than those who receive progressive relaxation training. Due to the fact that both these techniques involve relaxation, the author felt it was safe to assume that all subjects would experience some degree of reduced reaction to stress. Therefore, it was not the intention of the study to show that one technique reduces stress

while the other does not, but that the change produced by autogenic training is greater than the change achieved via progressive relaxation. The hypotheses will be stated in testable form in Chapter II.

Review of the Literature

The review of the literature is presented in three sections: physiological and psychological stress, occupational stress, and a review of the development and research involving autogenic training. The section on physiological and psychological stress discusses the developmental aspects of stress theory, focusing on the works of Cannon, Selye, and Mason, among others. This section offers a closer examination of the processes affected by the treatments used in this study.

The second section looks at stress solely from the perspective of occupation. This was a necessary concept to examine as this study deals with one specific occupation. The contributions of Herzberg, Maslow, and McGrath are examined in this section, and the facets of a given occupation that may induce stress are discussed.

Autogenic training is examined in the third section. The steps of training and the autogenic state are reviewed in detail. Because no research has ever been done on the use of autogenic training in a mental health occupational setting, existing literature was reviewed on the use of autogenic training in a variety of other settings.

Physiological and Psychological Stress

The content of this section will deal specifically with the concept of stress. It is necessary to achieve a certain level of understanding of this concept so that a more precise focus on what the autogenic training will reduce is obtained. In the following section, a more detailed focus on occupational stress will be presented.

Stress is conceptualized as the non-specific response of the body to any demand made upon it (Selye, 1974, 1976). Benson (1975) defines stress as the environmental conditions that require behavioral adjustment. Stress has also been defined as:

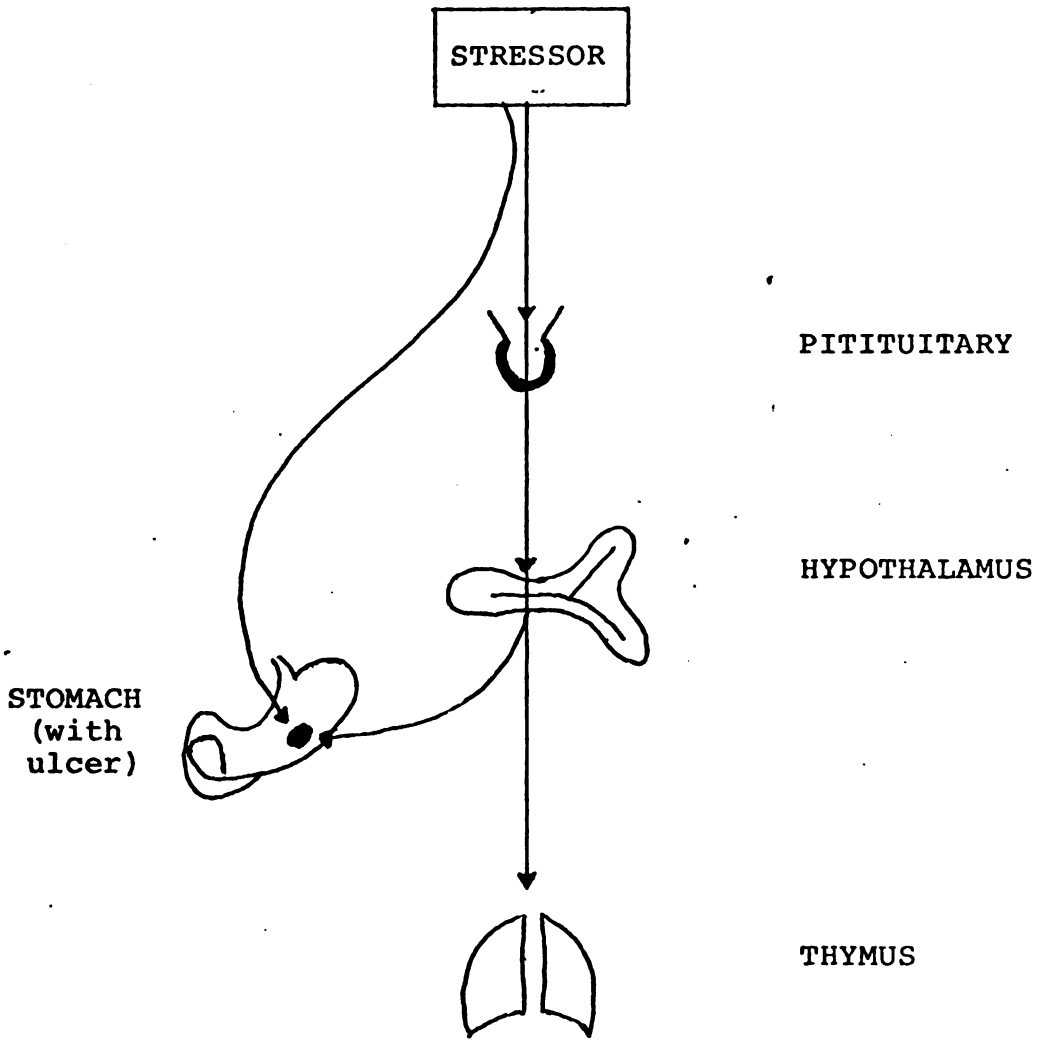
> ...the state of an organism where he perceives that his well-being (or integrity) is endangered and that he must divert all his energies to its protection (Cofer and Appley, 1964, p. 453).

Each of these definitions is valid even though somewhat different. Appley and Trumbell (1967) view the definition problem as stemming from the choices made in studying the phenomena of stress; i.e., investigators typically seek out conditions that produce stress and a measure to indicate its presence. This combination of events is seen as the most often used method to study stress. The problem is that the choices made are often governed by convenience and/or tradition. This, in turn, leads to a variety of uses, definitions, and purposes of the term stress. However, within all these definitions, there is the aspect of individuality in relation to stress. Individuality refers to the

notion that even while the physiological reaction elicited via exposure to stress is the same regardless of whether or not the stressor is pleasant or unpleasant (Selye, 1974), the reality of the event as a stressor is left up to the individual. Support for this hypothesis is seen in the reported differential patterns of autonomic responses to anger and anxiety (e.g., Ax, 1953; Funkenstein, King, Drolette, 1957; Schachter, 1957). If all people perceived a stressor in the same exact fashion, then, barring any organic differences, the physiological reaction should be the same in its intensity. It is due to this individuality that autogenic training is being used as a coping technique; for once it is mastered, it can be utilized by the individual at his/her discretion.

Stress was initially conceived of as an emotional as well as a physiological reaction by W. B. Cannon (1935). Cannon felt that to fully understand the factors that allow the human organism to effectively resist stress, it is necessary to explore the limits of these factors and beyond, to the point where stress alters the state of the internal environment. Within the internal environment, the stress reaction is mediated via hormonal action. This action occurs along the hypothalamus-pituitary-adreno-cortical axis (see Figure 1). The stressor stimulates the hypothalamus via sensory pathways. The hypothalamus is located at the base of the skull, and its function is to regulate body temperature and other autonomic activities. It produces a

Figure 1. Hypothalamus-Pituitary-Adreno-Cortical Axis



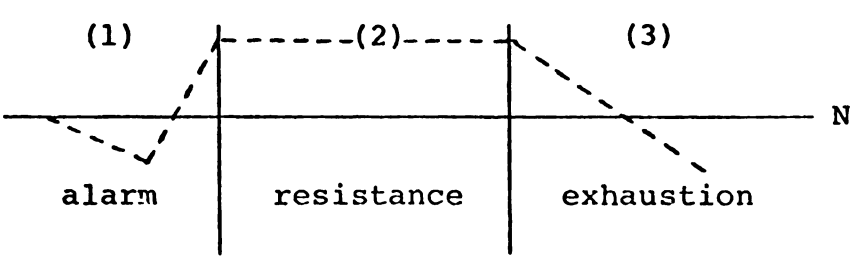
(from Selye, 1974, p. 31)

secretion that excites the pituitary gland which is attached to the base of the brain and whose function is to control other endocrine glands and monitor growth, maturation, and metabolism. The pituitary, when excited in this manner, discharges into the bloodstream adreno-corticotrophic hormone (ACTH) which, in turn, induces the external, cortical portion of the adrenal gland to secrete corticoids. Corticoids represent that group of hormones associated with the adrenal cortex. The corticoids are typically separated into two distinct groups, the anti-inflammatory glucocorticoids, of which cortisone is a member, and the pro-inflammatory mineralocorticoids. The latter group induce shrinkage of the thymus, a large, lymphatic organ located in the chest, concurrently with atrophy of the lymph nodes, inhibition of inflammatory reactions and sugar production (Selye, 1974). An additional destructive by-product of this reaction is potential development of peptic ulcers in the stomach resulting from increased corticoid levels in the blood.

This process represents the first stage of reaction in Selye's (1956, 1974) general adaptation syndrome, also known as the biological stress syndrome. This syndrome is conceptualized in a three-stage process. First, when exposed to a stressor, the organism experiences an alarm reaction. This reaction is characterized by autonomic excitability; changes in heart rate, muscle tone, blood content; adrenaline discharges; and gastrointestinal ulceration (Appley and Trumbull, 1967). Resistance to stress is diminished at

this point; and if the trauma is severe enough, such as mortal wounds or severe burns, death may be the immediate result. If the stressor is of the more typical, every day type (social, occupational, or familial), then the individual enters the second stage, that of resistance. This stage occurs as long as the individual can adapt to the stressful condition(s). The outcome of this stage is that the individual functions at a higher level than usual which results in the usage of adaptive energy. The higher level of functioning is maintained until it is no longer necessary--the stressor has passed--or until the individual's adaptive capability is depleted. At either of those points, the third stage is entered, the stage of exhaustion. If the stressor has passed, the organism typically lapses into a period of recovery (Patterson, 1979). If the adaptive capability has been exhausted, the organism dies. Figure 2 is a diagrammatic representation of the general adaptation syndrome (G.A.S.).

Figure 2. General Adaptation Syndrome



(from Selye, 1974, p. 27)

Selye's concepts have been scrutinized and re-evaluated. John Mason (1975) discusses and comments on some of Selye's basic principles. He points out that Selye's concept of non-specificity was based on the use of "relatively indirect morphological indices of adrenal cortical activity." Mason goes on, however to explain that as newer methods were developed to directly measure adrenal cortical, hormonal levels--urine and plasma analysis--Seley's conclusions were justified. Later research challenged Selye's non-specificity concept again, especially the physiological basis for initial mediation of the stress response. The more recent research shows that the pituitary-adrenal cortical activity is sensitive to emotional and social influences, thereby indicating that possibly the initial mediators of the stress response are external. Mason summarizes the changes this produces in stress theory by explaining that a single stimulus such as emotional arousal is seen as eliciting the hormonal response as opposed to many stimuli eliciting the hormonal response. This view of emotional arousal caused Selye's concept of non-specificity to be applied as a higher level of psychological phenomenon rather than a lower level physiological phenomenon.

Another area of re-examination is with the general adaptation syndrome (G.A.S.). When Cannon's (1929) work with homeostasis or internal balance of bodily functions is considered, then one of his principles of homeostasis appears to be in conflict with the non-specificity of the

of the general adaptation syndrome. Cannon viewed homeostasis as being regulated by bodily needs in that needs determined responses (Mason, 1975). Mason notes that from the original physiological perspective of the G.A.S., it becomes difficult to view physiological processes as being able to "generally" adapt to bodily needs. This is because the processes operate on a selective basis. For example, exposure to heat elicits the specific bodily reaction of perspiring to facilitate cooling. It it hypothesized by Mason that a more behavioral mode of adaptability fits with the concept of general adaptability. A behavioral perspective provides a basis for synthesizing the concept of non-specificity with the established homeostatic laws (Mason, 1975).

Mason further explores other aspects of stress theory such as the definition of stress, distinctions from biological stress, stress as an inducing agent and as a result, and additional physiological concerns. Selye (1975) defends and discusses all points made by Mason. The theory of stress remains a controversial subject. However, what does seem to be rising out of all perspectives is the recognition of the role of individual choice in dealing with stress. Lazarus and Opton (1966) discuss reaction patterns to the same stressor as varying greatly from individual to individual. They further believe that these characteristic patterns are determined by characteristics of the individual's personality. On this basis, it becomes required that stress be examined in terms of transactions between each individual and

the environment (Lazarus, 1966, 1971). Examining stress in this fashion necessitates examining all potential interrelating factors, such as past experiences, coping style, stimulus-response relationships, perception of the environment, defense mechanisms, and a considerably vast array of psychological and physiological processes.

In summary, the following chemical, physiological, and emotional changes occur during stress reactions: adrenocortical enlargement, secretion of adrenocorticotrophic hormone (ACTH) by the pituitary gland, production of adrenal-cortical hormones (corticoids) by the adrenal cortex, atrophy of the thymicolymphatic organs, disappearance of eosinophil cells, i.e., leukocytes (white blood cells) from the circulatory blood, and increased output of 17-ketosteroid in the urine and plasma. Biological phenomena such as heart rate, oxygen uptake, carbon dioxide elimination and respiratory exchange ratio, systolic and diastolic blood pressure, and body temperature have all been used to indicate the influence of a specific stressor on the human organism. Emotional reactions to stress are exhibited in a variety of ways: lack of patience, forgetfulness, insomnia, lethargy, apathy, increase or decrease in fantasy, errors in perception and judgment of distance typified by an increase in minor accidents, increase in anger episodes, increase in domestic quarrels, nausea, tension, anxiety, lack of breath, hot flashes, and rashes.

It is important to note that each of the indices mentioned in the former paragraphs is sensitive to the many uncontrollable forces other than adrenal-cortical secretions and, therefore, cannot play a highly discriminating role in the studies of the stress genre (Ulrich, 1960). In accepting the individuality of stress, it is accepted that what is viewed as stressful in terms of social situations, life-style, occupation or other variables, may not be viewed as stressful or at least not to the same perceived degree by others. Girardin (1967) states that the intensity of stress can only be gauged by the intensity of its manifestations. Considering the individual, this can be modified to say that the intensity of stress can only be measured by the intensity of its manifestations within each individual.

Occupational Stress

The effects of working within a given occupation are experienced on an individual basis. While individuals may react to the same aspect of an occupation as stressful, the type of reaction and the intensity of that reaction is determined by the individual (Patterson, 1978; McGrath, 1973). This perspective supports the notion postulated earlier by Lazarus and Opton (1966); i.e., reaction patterns to the same stressor vary from individual to individual. A thorough review of the literature on the subject of job satisfaction and occupational stress was undertaken in 1957 by

Herzberg, Mausner, Peterson, and Capwell. That study yielded 1,795 references. It was estimated in 1973 by Locke that 3,350 articles on the topic are in print. Using Locke's yearly average of 111, by now there must be an additional 666 articles yielding an approximate total of 4,016. This section will not review all this material, mainly because much of it is "trivial, repetitive, and inconclusive" (Locke, 1973). A brief description of the literature on stress and occupations is given so that a clearer picture of occupational stress can be attained.

Occupational stress is viewed as occurring when an environmental situation is perceived as presenting a demand which threatens to exceed a person's capabilities and resources. Stress is increased when the latter situation occurs under conditions where the individual expects a substantial difference in the rewards gained from meeting the demand as opposed to the costs from not meeting it (McGrath, 1973). This situation is represented by the equation ES=C(lD-Al), where ES equals the experienced stress, C represents the differential consequences such as rewards and costs of meeting versus not meeting the demand, D is the perceived demand, and A is equal to the perceived ability to cope with the demand. This formulation supports Selye's concept of stress as a neutral phenomenon by the following implications: (a) that the occupational demands and the capability to meet those demands must be perceived as significantly out of balance for "stress" to be considered;

(b) that an imbalance in either direction may be stressful; i.e., lack of stimuli and too many stimuli both produce stress; (c) that there must be an anticipated, substantial difference in consequences if the demand is met as opposed to consequences if it is not met; and (d) that these different consequences may arise from the individually anticipated rewards that come from meeting the demand or from not meeting it (McGrath, 1973). Both a and d imply the neutrality of the stressor. By applying numerical values to the formula, the implication is that the closer the demand comes to the ability to meet that demand, the less stress is experienced. However, research conducted by Love and McGrath (1971) demonstrated that the closer perceived demands were with the perceived ability, the greater the stress experienced. So it becomes feasible to modify the formula with a constant, k, resulting in ES=(C)(k-1D-A1). The formula now implies that experienced stress increases as demand and ability to approach each other.

The nature of the experienced stress is shaped by the nature of the activities and tasks in which an individual is involved and the relationship of those tasks of the stressor conditions; i.e., occupational setting (McGrath, 1970). Most, if not all, theorists would agree that in some sense the individual's emotional reactions to the tasks experienced are dependent upon the interaction between the individual and the environment (Locke, 1973). However, there exists considerable debate over which mental processes

determine the reaction. To facilitate an examination of this area of occupational stress, causal models of job satisfaction are next examined to bring into focus some of the types of variables considered causally relevant.

Expectancies in terms of discrepancy between what an individual's environment offers or what he attains as opposed to what he has adapted to or expects is felt by some to determine the individual's emotional (affective) reactions (e.g., Ilgen, 1971; McClelland, Athinson, Clark, Lowell, 1953; Spector, 1956). Locke points out that most attempts in relating expectancy to job satisfaction fail to control for the effects of values, goals, aspirations, etc. (Locke, 1973). It is conceded, however, that expectancy can influence indirectly the emotional reaction of an individual. For example, the expectancy of a pleasant event elicits the anticipation of the actual event and the pleasures accompanying it (Locke, 1973).

Needs are a second causal variable supported by some theorists (e.g., Lofquist and Davis, 1969; Morse, 1953; Wofford, 1971). However, the definition of needs as it relates to job satisfaction and occupational stress is not provided; neither is it distinguished from such related concepts such as values (Locke, 1973). Needs are present whether the individual desires them or not or is even aware of them; i.e., biological needs. If it is in this sense that theories see needs as causal for job satisfaction,

then a more adequate definition and extensive research is necessary.

The need theorists tend to equate needs with values and use the terms synonymously. There exists, however, a separate group that perceive values as the single most direct determinant of job satisfaction (e.g., Katzell, 1964; Locke, 1969; Likert, 1961; Rosen and Rosen, 1955). To understand the value concept, it must be seen as having two components, content and intensity (Rand, 1966). Content refers to what is wanted or valued, and intensity refers to how much it is wanted or valued. Locke expresses the idea that emotional responses in terms of values reflect a dual value judgment (Locke, 1973); i.e., the discrepancy between what the individual wants and what s/he perceives him/herself as obtaining and the individually perceived importance of what s/he is getting.

In summary, then, job satisfaction apparently stems from the perception that an individual's occupation satisfies or allows for the satisfaction of the individual's important occupational values, providing and to the degree that those values are in harmony with the individuals' needs. The concept of needs is discussed in the next paragraph.

For an individual to be satisfied with his/her occupation, some theorists think that it will be necessary for certain needs to be satisfied. Maslow (1954, 1970) and Herzberg (1959) offer two content theories of job

tion that purport to explain the nature of needs. Their premise is that the occupation itself must contain aspects that satisfy individual needs.

Maslow's need hierarchy has five basic categories of needs: (1) physiological needs, including air, food, water; (2) safety needs, including freedom from physical harm as well as economic security; (3) belongingness and love needs; (4) two types of esteem needs: mastery and achievement; (5) the need for recognition and approval of others; and (6) the need for self-actualization. Maslow did not develop a specific work motivation theory, but the implication of his theory as a plan for incentive systems is obvious (Locke, 1973). A job environment supplying a correspondence with an individual's position on the need hierarchy would, indeed, be optimal. While Maslow's hierarchy may be appealing, there is little solid support for its major premise of a fixed hierarchy which automatically determines and governs action. Locke points out that it is not always what an individual needs, but what s/he values most strongly, that dominates his/her behavior and cognitions.

Herzberg argues that occupational satisfaction and dissatisfaction stem from different causes: satisfaction on motivators and dissatisfaction on hygienes, hence the motivator-hygiene theory (Herzberg, Mausner, Snyderman, 1959). The theory was originally based on a study of two hundred engineers and accountants who responded to being asked to describe a time they felt especially dissatisfied and

especially satisfied. The motivators were: the work itself, achievement, promotion, recognition, responsibility, and other work-related occurrences. Hygienes were incidents involving supervisors, interpersonal relations, working conditions, company policies, and salary. Research on Herzberg's theory has questioned seriously its validity. King (1970), for example, identified five different versions of the theory, all from Herzberg's writings. The attempts at replication have proven to be inconsistent (House and Wigdor, 1967), and the idea of two unipolar continua to explain satisfaction and dissatisfaction seems indefensible (Locke, 1973). However, Herzberg does stress the importance of psychological growth as a precurser for job satisfaction.

In summary, job satisfaction results from the appraisal of one's occupation as either attaining or allowing for the attainment of one's important job values, with the stipulation that the values are congruent with or aid in the fulfillment of one's basic needs. The needs can be physical and/or psychological. One need stands out, and that is the need for individual growth. Growth is made possible through the work itself. Occupational stress, therefore, results from needs' not being met and/or personal growth's not being attained. The occurrence, or lack of occurrence, of these considerations is determined by the individual and the way in which each individual perceives his/her occupation and the interrelated events. It was expected that with the case-workers in the juvenile court system, there would be

varying levels of stress due to the varying perceptions of job satisfaction and dissatisfaction. This variable is accounted for in the sections on methodology and design.

Review of Development and Research in Autogenic Training

Autogenic training originates with the work of Schultz. Schultz's technique stems from the influence of Vogt who, at the end of the nineteenth century, was experimenting with his own version of hypnosis which he called fractionated hypnosis (Rosa, 1976). At the turn of the century, attempts were already in progress to aid individuals in breaking away from the dependence experienced when treated by hypnosis. Schultz involved himself in an intensive study of the psychological processes involved in learning as well as the physiological basis of what happens during hypnosis. The results of his research developed into autogenic training. Rosa (1976) viewed autogenic training as the best autohypnotic method as long as the individual absorbs the methodology as precisely as possible and continues practice until total mastery is achieved.

In autogenic training the goal is for the individual to obtain a trance-like hypnotic state. It is in this respect that autogenic training is considered an autohypnotic method. This characteristic differs autogenic training from other techniques that are based on the relaxation of the organism (Rosa, 1976). The autogenic response is characterized by the seeking and attainment of a level of reduced

consciousness within which all the organic processes, including self-awareness, occur on a different plateau than when completely conscious or fully asleep. Luthe, Jus, and Geissman (1963) conceive of the autogenic state as similar to a pre-sleep state. This concept is essentially derived from the work of Israel and Rohmer (1958), who pointed out an analogous pattern of autogenic electroencephalographic (EEG) readings with EEG changes that occur during drowsiness and the initial sleep stages. Extrapolating from this, Israel and Rohmer placed the autogenic state somewhere between sleep and the normal waking state. The exact position is discussed later.

The exact physiological changes that occur during the autogenic state have been widely explored. Geissman and Noel (1963), Jus and Jus (1963), Luthe (1960, 1962), and Polzien (1961) examined the effect of the autogenic state on heart rate. It was generally accepted that individuals experiencing the autogenically-induced relaxed state experienced a regular pattern of heart action. Changes in respiration and blood pressure were also explored by Luthe (1958, 1960). Luthe found that physiological processes experienced a decrease in intensity during the autogenic state. Skin temperature and muscle action have also been observed (e.g., Luthe, 1960; Polzien, 1955; Schultz and Luthe, 1959). These results are described later when the actual autogenic exercises are discussed.

The changes in physiology reported in the previous paragraph have been found to be similar to the changes recounted by Hess (1954) in his discrimination between a trophotropic physiologic state from an ergotropic state. The trophotropic state is best described as the chemically stimulated, through natural bodily processes, movement of living cells in relation to nutritive materials. This movement is either directed towards or away from the material. The ergotropic state is represented by the energizing of the plasma and tissues of the body via non-specific proteins, resulting in a general increased resistance to pathogens. Due to this similarity, Luthe (1963) postulated that the following will occur if there is a reduction of afferent impulses; i.e., a nerve impulse passing from the periphery of the body to the center. (1) There will be a significant decrease of reticulo-cortical activity; i.e., the external, plicated layer of gray matter surrounding the cerebrum and cerebellum. (2) There will be a decrease in thalamortical activity, referring to the mass of gray matter which serves as the relay junction for sensory stimuli to the cerebral cortex. (3) There will be functional changes in other structures associated with the reticular system: the hypothalamus which regulates body temperature and other autonomic activities; the spinal motor centers which send messages to the muscles of the body; and the limbic system, that group of subcortical structures concerned especially with emotion and motivation. These decreases and changes result in the promotion

of the trophotropic condition which increases the efficacy of the ergotropic condition (Luthe, et al., 1963). A special reinforcement of the trophotropic condition is created during passive concentration on the autogenic formulae, creating further promotion of trophotropically-oriented mental and physical functions. Passive concentration refers to the practice of concentrating on the suggestions given by a facilitator or by oneself. Also, it involves the ignoring of intruding thoughts and ideas, not the suppression of them. The autogenic formulae referred to here are discussed later in this chapter. Luthe (1970) summarizes these beneficial proceedings by viewing the therapeutic factor of autogenic training as the:

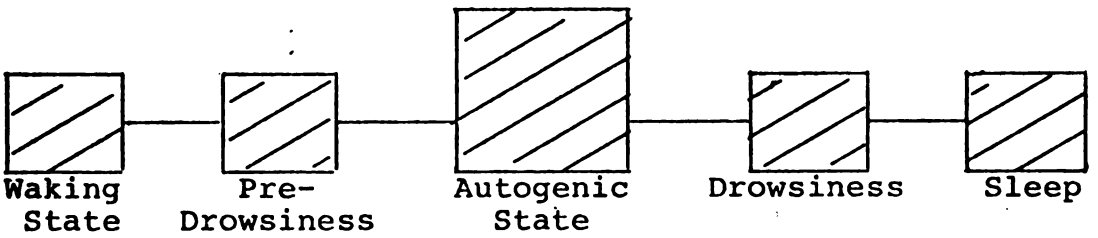
> ...self-induced modification of corticodiencephalic interrelations which enable natural forces to regain their otherwise restricted capacity for brain-directed, trophotrophically-oriented self-regulatory (autogenic) normalization (p. 125).

Experimental and clinical observations of the self-regulatory readjustment of some disturbed autonomic functions aroused considerations that relate to the concepts of Cannon and Selye who worked specifically with homeostasis and stress, respectively. These will be elaborated on later.

The occurrence of the autogenic state is conceptualized on an assumed "wake-sleep continuum" (Luthe, et al., 1963) (see Figure 3). It is a hypothesis of autogenic training that the autogenic state occurs somewhere between "predrowsiness" and drowsiness, referred to earlier by Israel

and Rohmer (1958). If an individual does not maintain his/her passivity in concentrating on the autogenic formula(e), then passing into drowsiness and eventual sleep is expected.

Figure 3. Position of Autogenic State

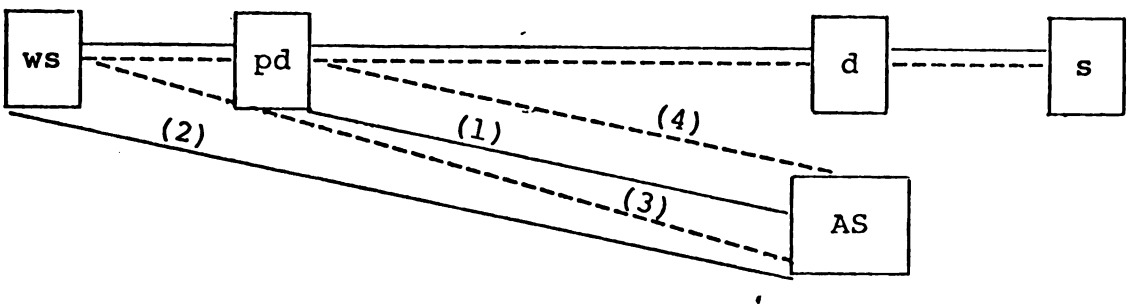


In the research of Luthe, et al. (1963), it has been shown that the degree to which an individual has been trained in autogenic training and the degree to which mastery has been attained affect the amount of time that passes between the waking state and the autogenic state. This variance is referred to as the "autogenic shift" (see Figure 4). Stated simply:

> In well-trained subjects, the autogenic shift would take place almost immediately after the waking state. Depending on the efficiency of the trainees technique, the autogenic shift may occur also at any intermediate stage between the normal waking state and drowsiness. Furthermore, we hypothesize that a direct shift from a state of consciousness to the autogenic state is not possible, and that the psychostate to sleep passes via "pre-consciousness." This hypothesis implies that there is a functional barrier which makes a direct passage from the autogenic state to drowsiness and sleep impossible (Luthe, et al., 1963).

Luthe (1970) points out that aspects of autogenic training are attributed by some to such diverse perspectives as

Figure 4. The Autogenic Shift



(1) Pre-drowsiness - autogenic state

(2) Waking state - autogenic state

(3) Intermediate - autogenic state

(4) Pre-drowsiness - autogenic state

the Pavlovian concepts of learning and conditioning and the neurophysiological hypothesis that suggests a state of inhibition will result from negative inducation. It seems that, for the moment, a solid theoretical concept that covers all the complex therapeutic elements and physiological changes that are associated with autogenic training is not at hand.

In summation, it is hypothesized that the central factor in autogenic training lies in the autogenic modification of corticodiencephalic interrelations. These relationships enable natural forces to regain their capacity for self-regulation. The therapeutic mechanisms of autogenic training are not restricted to either bodily or mental functions.

In addition, the psychophysiologic effects of autogenic training are directly opposed to the effects stemming

from exposure to stress (Luthe, 1970; Haward, 1965). There is evidence that physical and mental stresses reduce and restrict the efficacy of trophotropic processes and, thereby, reduce an individual's adaptable potential (Luthe, 1970). The psychophysiologic changes that occur during autogenic training facilitate and promote the trophotropic processes which, as discussed previously, in turn, promote the ergotropic processes.

Description of the Autogenic Exercises

The complete autogenic paradigm is presented here, beginning with the three phases and their components and followed by a description of each exercise in the first phase (from Luthe, 1976):

First Phase: Standard Exercises

1. First standard exercise: heaviness
2. Second standard exercise: warmth
3. Third standard exercise: cardiac regulation
4. Fourth standard exercise: respiration
5. Fifth standard exercise: abdominal warmth
6. Sixth standard exercise: cooling of forehead

Second Phase: Special Exercises and Preparatory Training for the Mediation Exercises

1. Learning to establish the psychophysiological effects of the standard exercises more quickly
2. Learning to prolong the duration of exercises up to thirty minutes or longer
3. Learning to perform the exercises under disturbing environmental conditions

Third Phase: Mediation Exercises

1. First meditative exercise: spontaneous experience of colors
2. Second meditative exercise: experience of selected colors
3. Third meditative exercise: visualization of abstract object
4. Fourth meditative exercise: experience of a selected state of feeling
5. Fifth meditative exercise: visualization of other persons
6. Sixth meditative exercise: awareness of the unconscious

The autogenic training begins with the trainee's assuming either a sitting or lying position. The sitting position requires an appoximate ninety degree angle between the trunk of the body and the thighs and an angle of equal degree between the thighs and the lower legs. The lying posture is with the trainee flat on his/her back, arms at the sides, legs comfortably spread, and head elevated if desired. This is followed by instructions to check the overall relaxation of the body via some simple exercises; i.e., tensing-relaxing. Then the trainee is instructed to concentrate on the thought, "I am at peace." It is the attempt of this peace formula to invoke for the trainee an atmosphere that invites the surrender or succumbing to the peaceful and relaxed theme (Rosa, 1976). Difficulty may be expected for those who have difficulty concentrating, but then this is the theme of autogenic training: to be able to

concentrate at any given time on any selected theme. This difficulty is overcome through practice, and it is essential that all autogenic trainees are informed during the initial indoctrination that the basic tenet of autogenic training is for the individual to practice and master techniques on his/her own. The trainer is nothing more than a guide.

The first two standard exercises focus on heaviness and warmth as experienced in the periphery of the body--the limbs. The phrase used to facilitate heaviness is "right arm heavy." However, the flexibility of autogenic training allows for the dominant arm of each individual to be used as the focal point of heaviness and warmth. This is possible in part due to the generalization of heaviness and warmth throughout the body (Schultz, 1970). This generalization is based on the fact that when alterations in muscle tone, such as heaviness, produced by the experience, are introduced to the particularly large area of the cerebral cortex such as that area corresponding to the preferred arm, the effect automatically extends to adjacent regions of the cortex, thereby inducing heaviness throughout the body. Warmth, however, requires a more intensive focus due to its vascular nature and delicate sensory quality (Rosa, 1976). Warmth sensors are closest together in the hand, more so than in any other part of the body, hence the inducing phrase of "right(left) hand warm." Because of the delicate nature of warmth, it sometimes occurs that from the torso on up, warmth is achieved, leaving the legs and feet cool. If this happens,

trainees are instructed to look at their feet and try to send the warmth through passive concentration. The phrase of "feet warm" is avoided to keep with the standard formula. But, due to the personal nature of autogenic experiences, it would be permissible to modify the formula to accommodate this phrase if, in fact, it aided the trainee in achieving the desired response.

The third formula is "pulse calm and strong." The pulse can be experienced in various parts of the body, and Rosa makes no distinction between any one place and any other. It has been reported that some individuals experience the pulse as uncomfortably strong and, thereby distracting (Rosa, 1976). Modification of the formula to "pulse calm and regular" or just "pulse calm" are suggested as two workable solutions (Rosa, 1976).

The fourth exercise is introduced with the formula "breath peaceful and regular." There is nothing experienced in this phrase that has not already occurred in the previous formulae. The regular breathing pattern is already established via the relaxed state induced by the heavy and warm condition.

The fifth experience is the result of the phrase "solar plexus warm." Assuming trainees are anatomically aware of this structure, they will have no difficulty focusing upon the proper area. If awareness is not present, then a simple locator is offered: "two fingers above the naval, behind the stomach" (Rosa, 1976). The solar plexus

structure is used because directly or indirectly, it governs the actions of all the abdominal organs. Warming the abdominal area brings warmth to the center of the body, thereby producing, in conjunction with the already warmed periphery, a state of total body warmth, leaving only the head to be considered.

The sixth and final exercise completes the first phase of autogenic training. "Forehead agreeably cool" is the standard formula. The attainment of a cool forehead results in the relaxation of the brain while allowing for necessary awareness. The brain functions in autogenic training as an aware organ so that passive concentration can be maintained, but the reflective, thinking aspect of the brain must be detached and uninvolved. This is similar to the common experience of finding oneself in a semi-conscious state where one is aware of voices and places and even of one's body position, but the awareness is one of being "off to the side" as a casual observer. Most people experience this sensation when waking from a deep sleep.

All exercises are practiced until the responses comes at will. This is the ultimate achievement of the first phase. The individual should be experiencing the body as a warm and heavy resting mass with a regular pulse and regular breathing in conjunction with a cool head. It must be understood that each individual is responsible for fitting each exercise into his/her life in the most personally optimal fashion. Modification of the autogenic exercises is

allowable within the confines of the goal for each exercise. Helpful hints and suggestions are offered by the instructor any time a persistent difficulty arises. These allowances promote and reinforce the individualistic style and purpose of autogenic training.

The advanced stages of autogenic training will not be discussed as they are not part of the design of this study. The advanced stages do allow an individual a deeper exploration into the experience of awareness concerning the physical identity. Schultz's description offers insight into what can be attained:

> In this state of absorption-de-concentrated, focusing on the interior experiences without distraction and turning more and more to the dream-like depth, the subject increasingly manifests his essential self in the nature of his experiences. The form and organization of the material presented--its richness, liveliness and luxuriance on the one hand, and on the other, aridity and poverty; colorful, concrete manifestations in all areas of sense-perception or schematic, abstract reactions, a confusion of petty detail, or a stark structure; chaos or rhythm, tending backwards or forwards--all the characteristics indicate apparently typologically elementary phenomena and are here able to develop and reveal themselves (Schultz, in Rosa, 1976, p. 112).

Tebicis, Ohno, Matsubara, Sugane, Takeya, Ikemi, and Takasaki (1977) utilized autogenic training to measure differences in physiological parameters using thirty high school girls over a period of four and one-half months. Their results suggested that the effects of autogenic training are predominantly long-term and result in gradual physiological changes that are, to some extent, maintained

between practice periods. Babcock (1976) experimented in the area of internal-external locus of control by using biofeedback, autogenic feedback, and autogenic training. While it was concluded that there was no difference in the effectiveness of biofeedback or autogenic training in producing movement towards internality, there was the conclusion that the combination of peripheral hand temperature and autogenic training was the most effective in producing significant gains.

Vasilios (1977) reported that subjects in a clincal prison population found autogenic training and relaxation training as the most effective in reducing tension and anxiety. Tebecis, et al. (1977), attempted to show that autogenic training was effective in reducing fine body movements, as a reduction of these movements is an indicator of relaxation. By incorporating a static sensograph to measure the body movements of two similar groups of normal high school girls, it was found that the autogenically trained group decreased in mean body movement with every session.

In an attempt to alleviate menstrual discomforts. Heczey (1978) utilized autogenic training in conjuction with vaginal thermo feedback. Her results indicated significantly high improvement for all training groups over control groups with the highest improvement in that group using the autogenic training and vaginal thermofeedback. Other groups were trained in self-regulation and biofeedback.

Autogenic training has been combined with drug therapy in exploration of the combination of effects. Kalachev (1976) studied the effects of certain drugs and autogenic training on the regression of symptoms in sixty-eight patients with neurotic and psychopathic conditions over a period of a year. Autogenic training combined with amytriptiline proved to be the most effective treatment for insomnia and inhibition, while autogenic training combined with aminazine was effective in the treatment of hysteria. Meiu, Zahariade, Patrascu, and Arion (1976) combined psychopharmacotherapy with classical psychotherapy and Schultz's autogenic training model with a group of one hundred patients' exhibiting neurotic and psychopathic behavior. It was concluded that autogenic training potentiated the drug treatment and psychotherapy and established and reinforced the therapeutic effects. Even without the use of drugs, autogenic training has been explored in its effectiveness with specific psychological disorders. Stark (1976) examined the use of autogenic training with a population of schizophrenics. Using heterogeneous groups of ten each, the standard formulae that make up the beginning phase of training were administered and mastered within three to four months. The advanced phases were not attempted. Results indicate that autogenic training is a suitable treatment for schizophrenia in combination with other therapeutic techniques.

Chiyama (1976) applied autogenics to the removal of physical symptoms occurring in the form of psychogenic tics.

In his study involving two thirteen year old boys, one with a vocalization tic, Chiyama administered the first four standard exercises in autogenic training in the first case and only the first two in the second. Results indicated that reciprocal inhibition of both tics through autogenic training is feasible, and a marked reduction of the symptoms was attained. In a similar effort to reduce the pain and recurrence of severe recurrent angina pectoris, Herring (1976) assessed the effectiveness of four relaxation techniques--self-directed relaxation, autogenic training, temperature feedback, and autogenic feedback--on reducing angina pectoris episodes. He found that:

> ...autogenic training is more effective in reducing angina pectoris episodes than medical therapy alone, self-directed methods, temperature, or autogenic feedback (p. 133).

Research with autogenic training has additionally been initiated as a technique to alleviate stress and anxiety resulting from malignancies; i.e., tumors. Dostalova (1977) applied autogenic training in six cases and found that there was a marked "calming and relief" in three and a lesser effect in two. It was concluded that an individual and complex approach was needed for each specific case and that autogenic training was a viable tool for relieving stress.

Autogenics have been effective when combined with cognitive-behavior modification. Bowman and Faust (1977) specifically used the two methods to treat a population of sixty-three alcoholics. In comparing treatment effects

with those elicited via control and placebo groups, it was determined that autogenics and behavior modification were an effective combination. The results showed that there was a significant reduction in anxiety and an increase in inner-directedness in all groups immediately following treatment. Tension reduction was greatest among personality-disordered alcoholics who were the heaviest drinkers prior to treatment.

Problems in the application of autogenic training have been discussed by Huppmann (1977). Huppmann concludes that although the autogenic method is generally innocuous, it is not suitable for certain groups of patients. The techniques cannot be expected to modify neurotic personality structures. The auto-concentration of exercises may also result in driving some patients deeper into isolation. Unhealthy motives may be suspect in patients who evade reality or who want to increase professional performance to excess. Individuals with poor imagination and who exhibit hysterical traits are to be excluded, as are people exhibiting psychotic, pre-psychotic, and severely depressive symptoms. Huppmann further concludes that sixty to seventy percent of patients selected for autogenic training can be expected to succeed. Rosa (1976) supports Huppmann (1977) with his statement that any acute psychotic state totally precludes any use of autogenics.

Additional research indicates that autogenic training is not necessarily superior to other relaxation techniques.

Madden (1976) compared autogenic training to a progressive relaxation program and found, on the basis of a multivariate analysis of variance for all outcome measures (of which there were eight), that there was no greater experimental effect for either treatment group. Support for a variety of relaxation techniques can be found in the report of Benson, Kotch, Crassweller, and Greenwood (1977). In explaining the historical and clinical considerations of the physiological response that underlies states of consciousness such as those induced via meditative hypnosis, relaxation, and autogenic training, the authors conclude that the research suggests relaxation training has therapeutic utility in the treatment of drug abuse, hypertension, premature ventricular contractions, vascular headache, and other stress-related disorders.

A call for the use of relaxation techniques such as autogenic training can be found in the work of Pelletier (1977). He states that the health professions must find methods of alleviating stress-related disease that does not require people to drop out of their families, jobs, or society, but can be incorporated into existing social structures and lifestyles. Methods suggested to control stress include meditation, autogenic training, visualizations, and biofeedback. Greenberg (1977) goes further as she suggests that the teaching of relaxation and its practice and reports on its effectiveness should all be included in heath instruction. She bases this need on her statement

that there is a scientific need for relaxation skills, just as there is for other hygenic concerns.

Structural analysis of the autogenic techniques is still occurring and modifications are still evolving. Rosa (1978) presents an amplified model which allows the individual a more autonomous technique with more combinations and variations of the original formula. Results show that the personal modifications expedite the desired synergistic effect intended by the original six, first phase exercises.

Tebecis (1977) comments on the lack of knowledge concerning altered states of consciousness such as those achieved through the use of autogenic training. He points out that while brain structures responsible for consciousness are known (i.e., the neocortex, brainstem, diencephalon, and the limbic system), little information is accessible concerning the relevant pathways within these structures. Methods like and including autogenic training are mostly decreased and/or uniform sensory inputs, motor outputs, and cognition. The concern presented by Tebecis is that while we are well informed about the components and processes involved in obtaining an altered state of consciousness, we know little about the relevant pathways or sites within each component. In spite of his concern over the lack of total understanding of what happens during such conditions, Tebecis states that the altered states of consciousness can and do lead to the relaxation of stress and also to high order personality integration. Additional support for obtaining

a relaxed state is furnished by Supos, Bodo, Nagypal, Tomka (1978) who analyzed EEG output during autogenically-induced relaxation. The concluded that autogenic training produces a multilateral change in cerebral electrical activity, resulting in increased alpha activity and a reduction in lower power levels; i.e., beta.

Research dealing with autogenic training directly applied to general stress is offered by Haward (1965). In seeking the efficacy of three therapeutic modes for reducing stress (i.e., psychotherapy, behavior therapy, and autogenic training), he concluded that psychotherapy elicits a greater reduction in stress reactivity (as measured by the Respiratory Disturbance Score) than does behavior therapy, but that behavior therapy plus autogenic training results in the greatest decrease of all. Rationale for this phenomenon is that autogenic training involves psychosomatic principles concurrent with involvement with the autonomic nervous system. The results in a more physical reduction as well as psychological reductions of stress. Haward's (1965) research used dysthymic (emotionally traumatized) individuals. Characteristic of this condition is abnormal sensitivity to subjectively-perceived environmental threats. This sensitivity is viewed as the source of the heightened reactivity to stress and in a real sense a measure of neurotic instability. Reduction of the stress reactivity, therefore, results in a very real and fundamental

improvement in personality dynamics and defenses. This concurs with the conclusion stated previously by Tebecis (1977).

Summary

The existing literature on autogenic training demonstrates the applicability of the technique in a variety of settings. Autogenic training was generally shown to function well as a catalyst for the reduction of stress and anxiety. The literature also showed that autogenic training is not applicable to all populations; an example cited was neurotic personality types. Also, it was indicted that autogenics was not always considered superior to other relaxation techniques, but was considered more on an equal level.

In view of the above, it was felt that autogenic training would serve well to facilitate stress reduction in a mental health occupational setting. In Chapter II the subjects, methodology, and instruments used in that setting are discussed. In addition, the testable hypotheses and research design are offered.

CHAPTER II

EXPERIMENTAL DESIGN, AND METHODOLOGY

Sample

The sample used consisted of eighteen case-workers who expressed an interest in participating in a project involving occupational stress reduction. It is recognized that large samples are typically preferred due to their allowing for greater reliability, their involving smaller sampling errors, and their leading towards a larger alpha. However, there is reasoning which favors utilizing small samples; i.e., small samples are economically feasible whereas large samples may not be. Also, Isaac and Michael (1977) point out that when conducting exploratory research, it becomes essential to remain close to the data. To allow for this, samples between ten and twenty are advantageous because they provide a workable sample size, provide for easy calculations, and provide for testing of the null hypotheses while overlooking weak treatment effects (Isaac and Michael, 1977). It is important to remember that within any investigation, statistically significant findings can be created for relevant variables by merely increasing the sample size. This common practice debilitates the variables in question to the point where educational significance is negated.

Population

The sample was obtained from the existing population of twenty-five case workers employed by the Ingham County Probate Court in Lansing, Michigan. The basic job description for a case worker is as follows:

1. Conduct a thorough investigation of each individual family to determine problems and possible solutions.
2. Develop and implement a treatment program for each family.
3. Contact and consult with other agencies involved in the treatment program.
4. Monitor the progress of the treatment program through contact with parents, children, foster parents, and other concerned individuals.
5. Counsel with individual families on the case load.
6. Staff cases with the supervisor and fellow case workers.
7. Attend staff meetings and training seminars.
8. Organize and operate new programs for abused and neglected families.
9. Prepare reports and other paper work necessary to bring a case before a judge.
10. Appear in court with individual clients.
11. Participate in the Interagency Council for Abuse and Neglect.
12. Supervise new case workers and the division when the supervisor is out of the office

Demographic Data

This study proposed to determine if one type of training facilitates reduction of stress better than another,

and, therefore, the sample is considered homogeneous. However, because stress stems from an individual's perception of the events around him/her and their real or potential significance, it becomes paramount to understand the factors which may influence that perception as it occurs in an occupational setting. As a potential aid in understanding the outcome of the study, the following demographic data is offered:

Table 2.0. Demographic Information

range of age:	23-35
male-female ratio:	6 males, 12 females
marital status:	9 married, 9 not married
race:	1 black, 17 white
months on the job:	4.5 months-96 months

Methodology

Subjects were randomly assigned to either the treatment or control group. The subjects were then assessed on level of present stress using the A-state scale of the State-Trait Anxiety Inventory (STAI). It has been shown that scores on the A-state scale increase when the individual is exposed to various modes of stress (Spielberger, Gorsuch, Lushene, 1970). Support for the use of the STAI is provided by Zeno (1976) in her research involving the STAI and imagined stress conditions. She found that the state

anxiety level increased as the degree of situational stress became more severe.

Blood pressure measurements were then obtained from each subject each day over a five day period. This yielded an average for the basal blood pressure; i.e., that blood pressure necessary to allow functioning for the organism when at complete rest.

With these data collected, subjects were administered the Life Experiences Survey developed by Sarason, Johnson, and Siegal (1977). This device served as the covariate in the study and allowed for greater understanding of the life situation of each subject at the time of treatment.

Following the administering of all three measures, treatment group T_1 received, over a six-week period, the entire first phase of autogenic training as described in Chapter I. Each week subjects were trained in each of the standard exercises as they sequentially occurred in the first phase. Subjects met three times each week for training. This yielded a total of eighteen training hours for each subject in treatment group T_1.

Control Group

In dealing with hypnosis-type techniques, common methodological problems have been lack of proper control and the use of same subjects for treatment and control (Barber, 1970). Lack of the proper control refers to the difficulty experienced in delineating the effects of suggestion. Experimental

studies show that approximately one-third of unselected control subjects testify that they experienced sounds and objects that are not present when given strong suggestions designed to produce them in a non-hypnotic setting (Barber and Calverley, 1964; Spanos and Barber, 1968). This leaves the problem of establishing for the control group conditions that parallel autogenic training without offering the actual training itself. This would require that a treatment be offered that does not involve the subjects' attaining a trance-like hypnotic state. To accomplish this, the control group, T_2, received over the same time period as treatment group T_1 a series of relaxation exercises that offer similar suggestive phrases, but do not involve the trance-like state unique to autogenic training. These exercises were provided by the work of Budzynski (1978). The exercises comprise a training program for relaxation consisting of six phases that promote body/mind relaxation. Each phase was practiced by the control group three times per week just as in T_1. The exercises were presented to the group by a Michigan State University student majoring in health education. This student's previous nursing experience and personal training in relaxation techniques would seem to have qualified her for the task.

Barber's second concern of same subjects for T_1 and T_2 was not relevant for the design of this study as subjects were randomly assigned to treatment groups.

Instruments

There were three instruments used in this study. Two were for measuring the effects of training--the A-state scale of the STAI and blood pressure. The other was the Life Experiences Survey, used as the covariate.

State-Trait Anxiety Inventory. The STAI consists of two scales, anxiety-state (A-state) and anxiety-trait (A-trait). Each scale consists of twenty items. A-trait measures the individual's susceptibility to anxiety and stress, while A-state measures the fluctuating emotional condition of the individual that is characterized by:

> ...subjective, consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity (Spielberger, et al., 1970).

The anxiety measured by the A-state scale can vary in its intensity as it stems from the characteristics and disposition of the individual.

High A-trait persons tend to experience more elevations in their A-state scores because high A-trait indicates a broader base of circumstances that are perceived as stressful or threatening. However, equally high A-trait persons do not necessarily experience parallel differences in A-state. This depends upon the individual's perception of a specific event as anxiety-producing, and that perception stems from the individual's past experiences. For this study only the A-state scale was administered due to an

interest in measuring stress and anxiety as it existed in the present and specific occupational setting of each individual.

Reliability is established through the utilization of internal consistency measures such as the alpha coefficient. The alpha coefficient was developed by Cronbach (1951) and is a generalization of the Kuder-Richardson twenty formula when the items are not scored dichotomously (Mehrens and Lehmann, 1973). According to Spielberger, et al., this provides a more meaningful picture of the reliability of the A-state scale because of the transitory nature of anxiety states; i.e., their fluctuation depending upon situational variables. Using test-retest reliability yielded poor correlations for A-state; the median r reported was .32 (Spielberger, et al., 1970). Using the coefficient alpha yielded reliability coefficients between .83 and .92.

Evidence of construct validity for the A-state scale is offered through two studies. One study involves 977 undergraduate students who were asked to respond to the scale under normal conditions; i.e., no overt stressor involved. They were then asked to do the scale a second time as they would just before a final exam in an "important" course. The mean score was higher on the second trial (Spielberger, et al., 1970). Point biserial correlations were used to indicate the degree to which each item on the scale reflected differences in the anxiety state produced by the two conditions. Reliability for the items ranged from .03 to .73.

Only one item failed to significantly discriminate between the two conditions for the males in the study, and all items were significantly higher under the stressed condition for the females.

A second study involved four conditions, one before a testing situation (normal), one following a ten minute period of relaxation training (relax), the third after ten minutes of testing (exam), and the fourth after viewing a stressful film (movie). The mean scores for the A-state scale were highest under condition four (movie) and decreased in the following order, exam-normal-relax.

Individual items on the A-state have been shown to be more effective at measuring intensity depending on the level of that intensity; i.e., high or low. This concept has been identified by Spielberger, et al. (1970), as item-intensity specificity. Examples are the statement, "I feel rested," which discriminates more effectively in the lower range of intensity. The statement, "I feel over-excited and rattled," discriminates best in the high range. The STAI purposely includes items at varying levels of intensity-specificity so that the scale is valid over a broad base of perceived levels of intensity.

Reliability is between .83 and .92 using the alpha coefficient. Validity is established through studies demonstrating higher scores under stressed conditions. Also, the A-scale compensates for the individual differences in perception of stress and intensity through the use of items

designed to discriminate intensity at high and low levels. This is important as it is expected that a given occupation will elicit varying degree of perceived intensity from those engaged in that occupation.

Blood Pressure. Blood pressure as a measure of stress is long established. Lennart found blood pressure abnormally high in front-line soldiers during World War II. These men, whose previous records showed no history of high blood pressure, experienced a drop in their blood pressures when they were returned to positions behind the front-line that equalled their pre-front-line readings (Lennart, 1967). Grinker (1966), in referring to exposure to prolonged periods of events involving emotional factors, found rising high blood pressure as the only consistently dependable relationship between exposure and effects. Benson, Marzetta, Rosner, Klemchuk (1974) investigated the use of the relaxation response as part of the therapeutic process for high blood pressure patients. Their results show statistically significant decreases in both the systolic and diastolic blood pressure. Recording blood pressure consists of taking two readings, the systolic and diastolic pressures. Simply stated, the systolic blood pressure is the highest pressure of force the blood places on vessel walls as the heart pumps blood into the system. This is the pressure produced by a heart-beat. Diastolic blood pressure is the lowest pressure the blood places on the vessel walls between heart-beats. These two numerical figures are represented by having the

systolic reading over the diastolic; i.e., 120/80, which is considered about normal for most people. The numerical values refer to the amount of pressure required to move a column of mercury to a particular height.

During this study blood pressure was recorded for five consecutive days for each subject before any treatments, so that a basal blood pressure could be obtained. The blood pressure was measured using an aneroid sphygmomanometer. This device consists of an aneroid manometer and an artery sphygmomanometer. The latter is commonly referred to as a compression cuff. It fits around the subject's arm, which should be slightly flexed and level with the heart. In this investigation, the right arm was used in all instances. Variations in pressure within the circulatory system are measured by the aneroid manometer. It consists of expandable metal baloons which react to the pressure variation. The reaction is read off a calibrated dial whose movement is a function of the movement of the metal bellows. The device used was manufactured by the M.P.C. Company of Kansas City, Missouri. The same device was used on all subjects for consistency. Reliability was established by having a registered nurse re-check the blood pressure with the identical instrument.

Life Experiences Survey. During recent years, many studies have examined the existing relationship between stress and individuals' susceptibility to psychological and physical problems (Sarason, Johnson, and Siegel, 1978).

These studies are typically based on the assumption that individuals who experience high degrees of life change during the recent past are more likely to experience physical and psychological problems. This type of stress is labeled life stress as it purports to encompass all that might befall an individual during a given amount of time. Holmes and Rahe (1967) both discovered a relationship between life stress and major and minor health changes. Wyler, Masuda, and Holmes (1971) have also shown that there is a relationship between life stress and the seriousness of chronic illness. On a more psychological plane, relationships between life stress and the occurrence of anxiety, depression, and tension have been established (Constantini, Braun, Davis, and Iervolino, 1973; Vinokur and Selzer, 1975).

Until the advent of the Life Experiences Survey, the most widely used device in life stress research was the Schedule of Recent Experiences (SRE) developed by Holmes and Rahe in 1967. This instrument is a self-administered questionnaire consisting of a list of forty-three events that subjects respond to by checking off those that they have experienced within the past year. Scoring weights for each item were determined by having a large group of subjects rate each item with regard to the amount of social readjustment that each event required (Sarason, et al., 1978). The SRE is based on the notion that life changes are stressful regardless of the desirability of the event. Therefore, both desirable and undesirable events are combined in

determining the life stress score. Brown (1974), Mechanic (1975) and Sarason, DeMonchaux, and Hunt (1975) all have questioned the logic behind the combination of both types of events.

A related issue is one for the concern of the quantification of life changes. This, of course, has been one of the major premises throughout this study; i.e., that stress is an individual consideration. Because individuals vary in how they are affected by the listed events, the values derived from group ratings may not accurately reflect the true impact that the events have on some individuals (Sarason, et al., 1978). Sarason, et al. (1978), point out that it seems most logical for a measure of life stress to possess three major characteristics: (1) it should possess a list of events experienced with at least some degree of frequency in the population being investigated, (2) it should allow for ratings by the respondents themselves concerning the desirability of the events, and (3) it should allow for the subjects to rate the impact of the experienced events. The LES meets these three criteria.

The LES (see Appendix E) consists of fifty-seven items. It is a self-report measure that allows the subjects to indicate the events they have experienced in the past year. Section one of the survey contains items for all subjects plus three blank spaces used to indicate other events a subjects might have experienced. Section two is designed for use by students. For this study, only section one was used.

In both sections the subject may rate the event from an extremely high positive (+3) to an extremely high negative (-3). It is possible to obtain a positive change score, a negative change score, and by combining the positive and negative, a total change score is obtained.

Test-retest reliability was established through studies using undergraduate students from psychology courses with a five-six week interval between test and retest. The reliability coefficients for the positive change score were .19 - .53 with P .001. The coefficients for the negative change score were .56 - .88 with P .001. The total change coefficients were .63 - .64.

Test-retest reliability studies suggest that the LES is a moderately reliable instrument, especially when the negative and total change scores are considered (Sarason, et al., 1978). It is important to note that the reliability of instruments such as these may be underestimated due to the time interval that occurs between the two testings. It is conceivable that during this time subjects may experience a wide variety of events that would be incorporated into their responses at the time of retesting. Because of this, it would not be appropriate to consider the variability as error, but instead as reflecting actual life changes.

The negative and total change scores have been shown to correlate significantly and in a positive direction with such personality indices as the State-Trait Anxiety Inventory and with a short form of the Marlowe-Crowne Social

Desirability Scale (Strahan and Gerbasi, 1972). This is important because, if the LES is to measure life stress, then it should correlate with personality types that theoretically would experience more stress.

Testable Hypotheses

To compare the differences in the changes produced by the two treatment groups, the following hypotheses were tested:

1. There is no difference between the means of the two treatment groups as measured by change in the diastolic blood pressure.

2. There is no difference between the variance of the two treatment groups as measured by the change in the diastolic blood pressure.

3. There is no difference between the means of the two treatment groups as measured by the change in the systolic blood pressure.

4. There is no difference between the variance of the two treatment groups as measured by the change in the systolic blood pressure.

5. There is no difference between the means of the two treatment groups as measured by the change in the state score of the State-Trait Anxiety Inventory.

6. There is no difference between the variance of the two treatment groups as measured by the change in the state score of the State-Trait Anxiety Inventory.

Design and Statistical Analysis

A factorial design consisting of two independent variables represented by treatment and stress is utilized. The initial perception of stress is corrected for by the use of the covariate LES. Subjects were randomly assigned to the two treatment groups to insure a true experimental design as defined by Campbell and Stanley (1966, pp. 21-31):

Figure 2.1. Graphic Representation of the Research Design

Autogenic Training	Control
X	X
X	X
X	X
X	X
X	X
X	X
X	X
X	X
X	X

where X = subject

It should be noted that the use of a covariate is called for by the possibility of interaction between stress and treatment. The covariate corrects for one or more concomitant variables. In this case, the use of a covariate that is based on experienced stress, such as the LES, is desirable.

The data collected were analyzed using analysis of variance with the Life Experience Survey (LES) as a covariate. Analysis of covariance (ANCOVA) assumes the normal

distribution of subjects; i.e., a unimodal and symmetrical distribution, the independence of subjects, and homogeneity. The equal number of subjects per treatment, random assignment to treatment groups, and individual group treatment sessions provide robustness for the possible violation of the aforementioned assumptions. Distribution and probability remain the same even though there may have been violations of assumptions underlying the derivation of the variance (Denenberg, 1976).

The level of significance for all tests used in this study was .05.

CHAPTER III

ANALYSIS OF RESULTS

The analysis was calculated at the Computer Center on the Michigan State University campus. The data reported are the result of multiple analyses of covariance.

Treatment Effects

Hypothesis 1

There is no difference between the means of the two treatment groups as measured by the change in systolic blood pressure.

Results of the analysis of Hypothesis 1 are shown in Table 3.0. A significant F-ratio was not obtained and, therefore, the null hypothesis of no differences remains.

Table 3.0. Analysis of Treatment Group Means Using Systolic Blood Pressure

MS Between	DF	F	P (.05)
3.091	1	.031	.863

This is interpreted as showing that after treatments, no difference exists between the means of the two treatment groups.

Hypothesis 2

There is no difference between the variances of the two treatment groups as measured by the change in systolic blood pressure

Table 3.1 contains results from the analysis of Hypothesis 2. Again, a significant F-ratio was not obtained and, therefore, the null hypothesis of no differences remain in effect.

Table 3.1. Analysis of Treatment Group Variance Using Systolic Blood Pressure

MS Within	DF	F	P (.05)
4.598	3	.046	.986

These results are interpreted as showing that after treatments, there is no difference between the variances (range of scores) of the two treatment groups.

Hypothesis 3

There is no difference between the means of the two treatment groups as measured by the change in diastolic blood pressure.

Analysis of Hypothesis 3 is presented in Table 3.2. A significant F-ratio was not obtained, resulting in the retention of the null hypothesis.

Table 3.2. Analysis of Treatment Group Means Using Diastolic Blood Pressure

MS Between	DF	F	P (.05)
55.910	1	2.241	.157

Hypothesis 4

There is no difference between the variances of the two treatment groups as measured by the change in the diastolic blood pressure.

Analysis of Hypothesis 4 is presented in Table 3.3. A significant F-ratio was not obtained, resulting in the retention of the null hypothesis.

Table 3.3. Analysis of Treatment Group Variance Using Diastolic Blood Pressure

MS Within	DF	F	P (.05)
77.136	3	3.091	.061

Hypothesis 5

There is no difference between the means of the two treatment groups as measured by the change in the state score of the STAI.

Data from the analysis of Hypothesis 5 are shown in Table 3.4. As in the preceding analysis, the null hypothesis was retained due to a failure to obtain an appropriate F-ratio.

Table 3.4. Analysis of Treatment Group Means Using the State Score of STAI

MS Between	DF	F	P (.05)
11.099	1	.399	.537

Hypothesis 6

There is no difference between the variances of the two treatment groups as measured by the change in the state score of the STAI.

Data from the analysis of Hypothesis 6 are shown in Table 3.5. The null hypothesis was retained due to a failure to obtain an appropriate F-ratio.

Table 3.5. Analysis of Treatment Group Variance Using the State Score of STAI

MS Within	DF	F	P (.05)
16.653	2	.599	.562

The data from both Hypotheses 5 and 6 are interpreted as showing that after treatment, thereis not a significant difference between the means of the two treatment groups or within the variance of the two groups using the STAI as the dependent measure.

In all cases, the investigator failed to reject the null hypothesis, confirming that no treatment effects occurred utilizing the employed measures.

Explorational Data: Trend Analysis

While the investigation failed to reject any of the six null hypotheses, thus indicating that for this study, autogenic group training produces no greater reduction of stress than does progressive relaxation group training, further analysis was initiated to examine the effects from an individual perspective. Appendices A and B show the results of individual t-tests performed on all subjects in relation to systolic and diastolic blood pressure. A summary of the significant results is offered in Table 3.6.

Table 3.6. Summary of Individual T-Tests: Blood Pressure Changes

	T_1			T_2		
	Signif. Decrease	Signif. Increase	No Signif. Change	Signif. Decrease	Signif. Increase	No Signif. Change
Systolic Blood Pressure	4	0	5	4	1	4
Diastolic Blood Pressure	4	0	5	6	0	3

A close examination of these data reveals that of the five subjects who achieved significance for the systolic blood pressure in T_2, one experienced an increase in systolic blood pressure after treatment. There were no increases in the diastolic pressure. For T_1, there was no significant increase after treatment in the systolic blood pressure of the four reporting significance. Again, there was no increase for the diastolic.

Table 3.7. Post-Treatment Increases in Blood Pressure

	T_1 Autogenic Training	T_2 Progressive Relaxation
Systolic Blood Pressure	0	1
Diastolic Blood Pressure	0	0

An examination of the STAI pre-post gives the following data:

Table 3.8. STAI State-Scale Score Pre-Post

*	1	43 - 31
*	2	64 - 31
*	3	30 - 30
*	4	50 - 42
	5	43 - 36
	6	40 - 43
	7	39 - 49
	8	45 - 28
	9	44 - 33
	10	50 - 42
	11	39 - 38
	12	42 - 45
*	13	36 - 41
*	14	48 - 32
*	15	31 - 36
	16	42 - 49
*	17	43 - 49
*	18	32 - 33

* = control

PRE $\bar{X} = 42.28$, SD = 5.149

POST $\bar{X} = 38.22$, SD = 4.259

Norms for college undergraduates:

$\bar{X} = 36.35$, SD = 9.67 = male

$\bar{X} = 35.12$, SD = 9.25 = female

This examination reveals that four of the nine subjects in the control group (T_2) experienced gains in their scores, as did four of the nine subjects in T_1. While none of these gains was statistically significant, it is important to remember that the source of stress and the impact are individually determined and not measured by any device. It is interesting to note that of the four subjects who experienced a significant increase in systolic blood pressure, two also experienced elevated STAI scores.

As stated in Chapter II, it must be considered that during the term interval between pre- and posttests, life events may have been such as to profoundly effect subjects and, therefore, outcomes. In this light, the LES covariant was administered pre- and post-. The results are offered in Table 3.9. Three of the nine subjects in T_2 experienced elevated scores, and two of nine subjects in T_1 experienced elevated scores. One of the subjects receiving an elevated LES also experienced a significant elevation in systolic blood pressure. An examination of items on the LES revealed that many subjects experienced changes that numerically "balanced out"; i.e., different events that were numerically equal.

An examination of the demographic data and their possible effects on measures was also considered. ANCOVAS were run on the effects of the variables on the systolic blood pressure, diastolic blood pressure, and the State Trait Anxiety Inventory. The only significant factor was

Table 3.9. Life Experience Survey: Pre-Post

SS	Pre-	Post-
* 1	6	13
* 2	16	14
* 3	10	9
* 4	18	22
5	31	27
6	39	43
7	11	8
8	36	24
9	11	10
10	29	27
11	18	6
12	18	3
* 13	3	3
* 14	14	3
* 15	5	5
16	8	14
* 17	19	13
* 18	14	9
* = control	$\bar{X}$ = 17.000 SD = 10.499	$\bar{X}$ = 14.944 SD = 10.067

that of race, in respect to the systolic and diastolic blood pressure. Also, it was shown that the covariant corrected for a significant amount of variance in the systolic and diastolic blood pressure. The data are presented in Table 3.10. The variable of race in this study is only applicable to one subject, a black male in the control group (see Appendix D).

Table 3.10. Effect of LES on Blood Pressure

	Systolic Blood Pressure	Diastolic Blood Pressure
F-Ratio	13.628	15.109
P (.05)	.001*	.001*

* = significant at .05 level

CHAPTER IV

SUMMARY AND DISCUSSION

Summary

The purpose of this study was to investigate the use of autogenic training as a stress reduction technique specifically for the case workers with Lansing, Michigan's juvenile probate court in Ingham County. It was hypothesized that autogenic training would produce a greater degree of change than would progressive relaxation training. The vast majority of literature supports the use of autogenic training as a viable stress reduction method in a variety of situations, although no attempt has been made to use autogenics in the setting described above. If autogenic training could be shown to reduce perceived stress within an occupational setting, then subjects on the job would have a self-contained and self-monitored system for coping with stress.

Subjects for the study were selected from the existing population of case workers at the juvenile court. In all, eighteen individuals indicated interest in participating in a study related to occupational stress. Two treatment groups were developed and subjects were randomly assigned to either T_1 (autogenic training) or T_2 (progressive relaxation). In T_1, subjects received, over a six-week period, all the standard exercises of the first phase of autogenic

training (see Chapter I). Each exercise was practiced and assistance offered for forty-five minutes to one hour per day, three days per week. T_2 received Budzynski's progressive relaxation exercises for the same amount of time. The exercises are listed in sequence in Appendix F.

Scores on the Life Experiences Survey (LES) were used as covariates, and blood pressures, along with scores on the state scale of the State-Trait Anxiety Inventory (STAI), were used to measure the effects of treatment. It was hypothesized that scores on the state scale and the basal blood pressure would be lower for the autogenic group after treatment.

Analysis using ANCOVA revealed that the change produced by the autogenic training was not significantly greater than the change produced by the progressive relaxation training. Subsequent analysis via individual t-tests revealed that some subjects experienced significant changes in blood pressure.

Discussion

The investigation revealed no effects to groups due to treatment. While it is not possible to explore hidden causes for results, overt factors that can be considered as potentially effecting results can be explored and discussed at this time. These will be theory, sampling, design, instrumentation, treatment, and individual differences.

Theory

If theory is vague or misinterpreted, it serves as a viable error source. The concept of stress is admittedly theoretical and, therefore, open to different interpretation and debate. Selye's concept of stress as a single entity is not fully accepted by all branches of the medical or psychological professions (Mason, 1975). However, the literature is quite clear on the reduction of stress resulting from the use of a variety of techniques. Plus, the varied application of stress reduction and the subsequent successes support its conceptualization as an entity. Still, theories are subject to change in light of new information, insights, and as yet undiscovered considerations. In view of this, lack of a totally clear theoretical base cannot be ruled out as effecting the outcome of the study.

Sampling

Sampling is not viewed as a major source of concern for error in this study. The sample came from the existing population of available subjects, and all subjects expressed an interest in the investigation. Motivation was not seen as a problem. What may prove to be important are the individual difference that may exist between subjects. This will be considered when discussing these differences in later paragraphs.

Design

The overriding concern here is whether the organization of the study could have affected the outcomes. While subjects experienced identical lenghths of time for treatment periods, the actual time of day when treatments occurred did vary; i.e., T_1 received training from 8 am to 9 am, while T_2 received training from 9 am to 10 am. It must be considered that each time period carried with it a specific "frame of reference," not only for the occupation, but for each individual as well. It was observed that during the 8-9 period, the first working hour, most individuals would spend some time settling in; i.e., drinking coffee, talking, etc. 9-10, the second working hour, tended to be one of high productivity. While these observations are subjective and informal, their ramifications cannot be ignored.

Another possible confounding variable is the differences existing between the training facilitators. While the investigator of this study trained and prepared the control group facilitator, differences such as sex, experience, ability to establish rapport, and reaction of the subjects to personality should be considered as possibly affecting outcomes. The two-trainer approach was thought best in order to avoid potential bias toward success of the autogenic training group.

Instrumentation

Validity and reliability concerns have been discussed in Chapter II. Here the prevailing question is what might account for the scores on the measures. It would be fairly difficult to fake a blood pressure read out; and trained personnel were used to obtain
as a source of error can be ruled out. It should be noted here that subjects' blood pressures were not high to begin with. This "normal" condition inhibits much drop or gain in blood pressure. The STAI is a simple device consisting of two twenty-item scales. It is possible that subjects may have had expectations from training that failed to be fully realized. This may have been reflected through responses to items as to indicate little or no change in experienced stress/anxiety. This was considered because stress is an internally as well as externally experienced phenomena. In other words, what the physiology may show need not be cognitively recognized. Expectations of a total change that is not fully realized may negate a recognition of experienced reduction. A more detailed device or a battery of measures might correct for a change in expectancy by identifying more specifically and behaviorally components of attitudes and feelings.

Treatment

Meticulous preparation and training negate much of the possibility of inappropriate presentation of autogenic

training or progressive relaxation. It is not possible, of course, to totally ignore the possibility of unrecognized error in presentation. Because of the sequential nature of both techniques and the verbal intonations necessary to enhance each sequence, training and practice were carefully and regularly carried out.

A larger concern is the amount of time spent in training. It must be considered that more time might have produced greater receptivity and, hence, greater change. The full autogenic training was not offered (i.e., all three phases), but only that portion which parallels other relaxation methods. While research supports the use of the first phase only, the transmission of all three phases might result in greater benefits. Therefore, length of treatment and possibly the effect of offering one of the three phases of autogenics might affect outcomes.

Subject Differences

It is here where the greatest source of confounding may be found. Analysis of the covariate revealed significant variance between subjects. In other words, most of the change in scores could be accounted for by the differences in life experiences and the subsequent changes over the training period. The grayest area for the researcher to understand is the psychological impact of life experiences. To score an event on the LES a minus three indicates that an individual perceives that event as highly

stressful, but it does not measure the full individual impact, nor does it expose how the individual interprets that event or how that event is absorbed into the person's life. The interference in physiological responsiveness stemming from that impact cannot be measured as the total physiological processes involved in stress reduction is not fully understood. Considering this, the use of a covariate corrects for measurable individual differences but cannot measure psychological impact and its subsequent effects. This must be considered as a source of confounding variables that is difficult to control.

Conclusions and Implications for Future Research

The goal of this investigation was to investigate whether autogenic training produces more change in terms of reducing stress than does progressive relaxation. The results show that autogenic training does not, in fact, produce a greater change at the .05 level of significance. Closer examination of the data shows that subjects experienced many significant life changes as measured by the covariate LES and that this accounts for a significant amount of the variance in the results. Initial differences were controlled for by the use of the covariate, but unmeasurable impact and interference of the life and occupational experiences could not be controlled. It would be a disservice to negate the use of autogenic training as a stress

reducer as, in this study, autogenic training was shown to be as good as progressive relaxation.

Future researchers might consider that longer training periods and tighter controls may help produce more significant results. Also, the offering of the entire autogenic training model may facilitate greater results, although it should be noted that the process involves very intense meditative procedures and might not be considered appropriate as an easily handled coping technique. More extensive research using the Life Experiences Survey (LES) may enable researchers to understand the impact of life events and subsequent interference with receptivity to stress-reducing techniques. This would be an important area to explore as the individual perception of life events determines the impact that is experienced. Understanding why individuals perceive events as they do would not only benefit a stress-reduction program, but any other therapeutic process as well.

Two additional considerations are the stress reactivity of the subjects and their age. Stress reactivity is a phrase applied to the notion of each individual's having his/her own "breaking point"; i.e., that point at which a reaction to stress is manifested. Some individuals are more stress tolerant than others. These issues are raised because, in considering all aspects of stress theory, it must be included that identified stressful occupations often attract individuals who can handle that occupational stress

quite effectively. Therefore, they would experience few chronic effects from prolonged exposure to the occupational stressors. Age is mentioned because Pelletier (1977) points out that older individuals are more subject to hypertension and other stress-related disorders than are younger people. The range of ages for the subjects was 23-35, leaving variance for the amount of natural immunity and adaptability within the sample.

A final consideration is the possibility that a canceling effect occurred during this investigation. The effects of autogenic training and progressive relaxation may have been equally positive, resulting in a statistical output of no differences. To offset this possibility, future researchers of autogenic training could consider a no treatment control group as an alternative methodology.

APPENDIX A

PRE-POST SYSTOLIC BLOOD PRESSURE AVERAGES

Pre-Post Systolic Blood Pressure Averages

SS	Pre	Post	F	Between	Within
x 1	115.40	128.40	4.24	.001*	.191
x 2	107.60	100.00	0	.035*	1.00
x 3	106.80	109.20	1.11	.529	.921
x 4	133.60	108.00	4.49	.000*	.175
5	116.00	106.40	1.07	.030*	.948
6	109.60	110.00	3.47	.939	.255
7	133.20	138.00	11.46	.309	.037*
8	130.40	120.80	64.00	.041*	.001*
9	113.40	99.00	8.93	.000*	.057
10	113.20	108.00	1.97	.247	.528
11	122.00	111.00	1.82	.093	.574
12	125.40	117.80	1.97	.054	.528
x 13	144.00	136.40	1.12	.031*	.919
x 14	149.20	145.60	2.14	.305	.479
x 15	147.00	129.00	14.85	.032*	.023*
16	122.40	111.20	8.48	.006*	.062
x 17	100.60	105.00	62.50	.240	.001*
x 18	120.80	107.60	37.91	.057	.004*

x = control

* = significant at .05 level

APPENDIX B

PRE-POST DIASTOLIC BLOOD PRESSURE AVERAGES

Pre-Post Diastolic Blood Pressure Averages

SS	Pre	Post	F	Between	Within
x 1	77.60	76.00	10.71	.560	.041*
x 2	68.20	62.00	2.17	.033*	.471
x 3	72.40	73.40	3.71	.561	.232
x 4	89.20	75.00	7.81	.000*	.071
5	82.80	77.00	1.26	.090	.828
6	72.40	70.00	0.00	.000*	1.00
7	85.20	76.00	1.11	.032*	.924
8	80.40	77.00	25.00	.171	.009*
9	78.80	68.00	1.26	.007*	.828
10	75.20	75.00	2.23	.943	.456
11	70.80	68.40	19.00	.335	.015*
12	81.40	70.00	0.00	.000*	1.00
x 13	90.00	80.00	0.00	.000*	1.00
x 14	95.00	90.00	2.50	.028*	.397
x 15	98.00	81.00	28.33	.005*	.007*
16	90.20	71.00	2.44	.000*	.409
x 17	63.40	62.00	3.71	.613	.232
x 18	79.60	72.00	1.73	.045*	.609

x = control

* = significant at .05 level

APPENDIX C

ANCOVA OF DEMOGRAPHIC DATA ON:

SYSTOLIC BLOOD PRESSURE

DIASTOLIC BLOOD PRESSURE

STATE-TRAIT ANXIETY

ANCOVA OF DEMOGRAPHIC DATA ON
SYSTOLIC BLOOD PRESSURE

	LES	Sex	Marital Status	Age	Months on Job	Race
F	13.268	4.305	.008	.449	3.655	6.902
P	.001	.052	.928	.505	.060	.011

ANCOVA OF DEMOGRAPHIC DATA ON
DIASTOLIC BLOOD PRESSURE

	LES	Sex	Marital Status	Age	Months on Job	Race
F	15.109	.740	.642	1.085	3.001	5.181
P	.001	.393	.426	.301	.087	.026

ANCOVA OF DEMOGRAPHIC DATA ON
STATE-TRAIT ANXIETY INVENTORY

	LES	Sex	Marital Status	Age	Months on Job	Race
F	.757	.060	.548	.337	.323	.052
P	.712	.818	.500	.593	.600	.831

APPENDIX D

SELF-EXAMINATION QUESTIONNAIRE

(STAI)

SELF-EVALUATION QUESTIONNAIRE

(Developed by C. D. Spielberger, R. L. Gorsuch, and R. Lushene.)

DIRECTIONS: A number of statements which people have used to describe themselves are given below.. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel right now; that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement, but give the answer which seems to describe your present feelings best.

		Not at All	Some-what	Moder-ately So	Very Much So
1.	I feel calm.	1	2	3	4
2.	I feel secure.	1	2	3	4
3.	I am tense.	1	2	3	4
4.	I am regretful.	1	2	3	4
5.	I feel at ease.	1	2	3	4
6.	I feel upset	1	2	3	4
7.	I am presently worrying over possible misfortunes.	1	2	3	4
8.	I feel rested.	1	2	3	4
9.	I feel anxious.	1	2	3	4
10.	I feel comfortable.	1	2	3	4
11.	I feel self-confident.	1	2	3	4
12.	I feel nervous.	1	2	3	4
13.	I am jittery.	1	2	3	4
14.	I feel "high strung."	1	2	3	4

		Not at All	Some-what	Moder-ately So	Very Much So
15.	I am relaxed.	1	2	3	4
16.	I feel content.	1	2	3	4
17.	I am worried.	1	2	3	4
18.	I feel over-excited and "rattled."	1	2	3	4
19.	I feel joyful.	1	2	3	4
20.	I feel pleasant.	1	2	3	4

APPENDIX E

THE LIFE EXPERIENCES SURVEY*

* A copy of this article was distributed to each subject.

THE LIFE EXPERIENCES SURVEY

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event. Be sure that all check marks are directly across from the items they correspond to.

Also, for each item checked below, please indicate the extent to which you viewed the event as having either a positive or negative impact on your life at the time the event occurred. That is, indicate the type and extent of impact that the event had. A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

Scale:
- -3 extremely negative
- -2 moderately negative
- -1 somewhat negative
- 0 no impact
- +1 slightly positive
- +2 moderately positive
- +3 extremely positive

SECTION 1	0 to 6 mo	7 mo to 1 yr	
1. Marriage			-3 -2 -1 0 +1 +2 +3
2. Detention in jail or comparable institution			-3 -2 -1 0 +1 +2 +3
3. Death of spouse			-3 -2 -1 0 +1 +2 +3
4. Major change in sleeping habits (much more or much less sleep)			-3 -2 -1 0 +1 +2 +3
5. Death of close family member:			
a. Mother			-3 -2 -1 0 +1 +2 +3
b. Father			-3 -2 -1 0 +1 +2 +3
c. Brother			-3 -2 -1 0 +1 +2 +3
d. Sister			-3 -2 -1 0 +1 +2 +3
e. Grandmother			-3 -2 -1 0 +1 +2 +3
f. Grandfather			-3 -2 -1 0 +1 +2 +3
g. Other (specify)			-3 -2 -1 0 +1 +2 +3

		0 to 6 mo	7 mo to 1 yr	
6.	Major change in eating habits (much more or much less food intake)			-3 -2 -1 0 +1 +2 +3
7.	Foreclosure on mortgate or loan			-3 -2 -1 0 +1 +2 +3
8.	Death of close friend			-3 -2 -1 0 +1 +2 +3
9.	Outstanding personal achievement			-3 -2 -1 0 +1 +2 +3
10.	Minor law violations (traffic tickets, disturbing the peace, etc.)			-3 -2 -1 0 +1 +2 +3
11.	Male: wife/girlfriend's pregnancy			-3 -2 -1 0 +1 +2 +3
12.	Female: pregnancy			-3 -2 -1 0 +1 +2 +3
13.	Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)			-3 -2 -1 0 +1 +2 +3
14.	New Job			-3 -2 -1 0 +1 +2 +3
15.	Serious illness or injury of close family member:			
	a. Father			-3 -2 -1 0 +1 +2 +3
	b. Mother			-3 -2 -1 0 +1 +2 +3
	c. Sister			-3 -2 -1 0 +1 +2 +3
	d. Brother			-3 -2 -1 0 +1 +2 +3
	e. Grandfather			-3 -2 -1 0 +1 +2 +3
	f. Grandmother			-3 -2 -1 0 +1 +2 +3
	g. Spouse			-3 -2 -1 0 +1 +2 +3
	h. Other (specify)			-3 -2 -1 0 +1 +2 +3
16.	Sexual difficulties			-3 -2 -1 0 +1 +2 +3
17.	Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			-3 -2 -1 0 +1 +2 +3
18.	Trouble with in-laws			-3 -2 -1 0 +1 +2 +3
19.	Major change in financial status (a lot better off or a lot worse)			-3 -2 -1 0 +1 +2 +3
20.	Major change in closeness of family members (increased or decreased closeness)			-3 -2 -1 0 +1 +2 +3
21.	Gaining a new family member (through birth, adoption, family member moving in, etc.)			-3 -2 -1 0 +1 +2 +3
22.	Change in residence			-3 -2 -1 0 +1 +2 +3

		0 to 6 mo	7 mo to 1 yr						
23.	Marital separation from mate (due to conflict)			-3	-2	-1	0	+1	+2	+3
24.	Major change in church activities (increased or decreased attendance)			-3	-2	-1	0	+1	+2	+3
25.	Marital reconciliation with mate			-3	-2	-1	0	+1	+2	+3
26.	Major change in number of arguments with spouse (a lot more or a lot fewer arguments)			-3	-2	-1	0	+1	+2	+3
27.	Married male: change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)			-3	-2	-1	0	+1	+2	+3
28.	Married female: change in husband's work (loss of job, beginning new job, retirement, etc.)			-3	-2	-1	0	+1	+2	+3
29.	Major change in usual type and/or amount of recreation			-3	-2	-1	0	+1	+2	+3
30.	Borrowing more than $10,000 (buying home, business, etc.)			-3	-2	-1	0	+1	+2	+3
31.	Borrowing less than $10,000 (buying car, TV, getting school loan, etc.)			-3	-2	-1	0	+1	+2	+3
32.	Being fired from job			-3	-2	-1	0	+1	+2	+3
33.	Male: wife/girlfriend's having abortion			-3	-2	-1	0	+1	+2	+3
34.	Female: having abortion			-3	-2	-1	0	+1	+2	+3
35.	Major personal illness or injury			-3	-2	-1	0	+1	+2	+3
36.	Major change in social activities; e.g., parties, movies, visiting (increased or decreased participation)			-3	-2	-1	0	+1	+2	+3
37.	Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			-3	-2	-1	0	+1	+2	+3
38.	Divorce			-3	-2	-1	0	+1	+2	+3

		0 to 6 mo	7 mo to 1 yr	
39.	Serious injury or illness of close friend			-3 -2 -1 0 +1 +2 +3
40.	Retirement from work			-3 -2 -1 0 +1 +2 +3
41.	Son or daughter leaving home (due to marriage, college, etc.)			-3 -2 -1 0 +1 +2 +3
42.	Ending of formal schooling			-3 -2 -1 0 +1 +2 +3
43.	Separation from spouse (due to work, travel, etc.)			-3 -2 -1 0 +1 +2 +3
44.	Engagement			-3 -2 -1 0 +1 +2 +3
45.	Breaking up with boyfriend/girlfriend			-3 -2 -1 0 +1 +2 +3
46.	Leaving home for the first time			-3 -2 -1 0 +1 +2 +3
47.	Reconciliation with boyfriend/girlfriend			-3 -2 -1 0 +1 +2 +3
	OTHER RECENT EXPERIENCES WHICH HAVE HAD AN IMPACT ON YOUR LIFE. LIST AND RATE:			
48.	_____			-3 -2 -1 0 +1 +2 +3
49.	_____			-3 -2 -1 0 +1 +2 +3
50.	_____			-3 -2 -1 0 +1 +2 +3

SECTION 2: STUDENT ONLY:

51.	Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			-3 -2 -1 0 +1 +2 +3
52.	Changing to a new school at same academic level (undergraduate, graduate, etc.)			-3 -2 -1 0 +1 +2 +3
53.	Academic probation			-3 -2 -1 0 +1 +2 +3
54.	Being dismissed from dormitory or other residence			-3 -2 -1 0 +1 +2 +3
55.	Failing an important exam			-3 -2 -1 0 +1 +2 +3
56.	Changing a major			-3 -2 -1 0 +1 +2 +3
57.	Failing a course			-3 -2 -1 0 +1 +2 +3
58.	Dropping a course			-3 -2 -1 0 +1 +2 +3
59.	Joining a fraternity/sorority			-3 -2 -1 0 +1 +2 +3

	0 to 6 mo	7 mo to 1 yr	
60. Financial problems concerning school (in danger of not having sufficient money to continue)			-3 -2 -1 0 +1 +2 +3

APPENDIX F

PROGRESSIVE RELAXATION EXERCISES

PROGRESSIVE RELAXATION EXERCISES

Exercise I: Tense-SIO-Relax

This first tape of Budzynski's program allows the subject to develop a "conscious awareness" of tension and relaxation in the muscles. Through this exercise, the subject experienced the difference between what a tense muscle feels like and what a relaxed muscle feels like.

Exercise II: Differential Relaxation

This exercise helped the subject learn to relax some muscles while others are active. Through this experience, subjects were able to relax areas that are usually tensed as a reaction to stress; i.e., jaw, abdomen, and shoulders, while allowing those muscles necessary for the task at hand to function as necessary.

Exercise III: Limb Heaviness

The third exercise initiated practice in reducing muscle tonus via auto-suggestion phrases. The induction of "heaviness" into the muscles by suggestion was practiced at this time, and the introduction of the "Passin attitude" also occurs here.

Exercise IV: Arms and Legs Heavy and Warm

This exercise continues the reduction of muscle tonus by adding the experience of "warmth" into the auto-suggestion. The warmth experienced is a result of an increase of blood flow into the small arteries of the hands and feet. This is accomplished by decreasing the output of the sympathetic nervous system. The sympathetic nervous system (SNS) is that part of the autonomic nervous system which reacts to anxiety, stress, any form of excitation.

Exercise V: Forehead and Facial Relaxation

A continuation of the previous phrases plus new ones occurred here. Subjects were instructed to relax the jaw via separation of the upper and lower mandibles. Subjects were also instructed to "smooth out" the brow to facilitate forehead relaxation.

The phrase "jam calm" was introduced here as a form of summation for whole body relaxation. As the subject experienced a feeling of over-all relaxation, the phrase "jam calm" was repeated in an effort to form an association between the phrase and the feeling.

Exercise VI: Stress Management

In this final exercise, subjects were asked to visualize a "stressful" situation and remain relaxed throughout. It was expected that the first few attempts would result in difficulty in maintaining a relaxed state. Subjects were

instructed to keep trying and, if it were too difficult, to eliminate the visualization and focus on relaxing.

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