STRESS CATEGORY DIFFERENCES BETWEEN MALE AND FEMALE MEMBERS OF THE AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT

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CHAPTER I

INTRODUCTION

Stress has been defined by many researchers. Webster's (cited in Allee, 1981) definition is that "stress is a force producing change in the shape of a body" (p. 368). Applying this to humans it is known that stress or pressure causes behavioral stress. Stress may be attributed to inability to deal with occupational, physical, social, emotional or economic difficulties. In other words, stress may be anything which might cause one to react or even deviate from a usual behavior pattern.

Through the last part of the eighteenth and the first half of the nineteenth centuries, doctors attributed many diseases to conditions such as despair, grief, and melancholy (commonly called depression today). In the last quarter of the twentieth century the field of medical science has considered again the causes of disease doctors identified two centuries ago: despair, grief, melancholy, and other emotional conditions. With this recognition has come awareness of the role stress plays in disease such as stomach ulcers, hypertension, rheumatoid arthritis, heart disease, migraine headaches, asthma, and cancer. In the last decade the concern has grown especially in the areas of human services. Some of the questions concerning stress have been how can one learn to identify and cope with stressful situations, what produces stress, what are the symptoms and can skills be acquired to eliminate or minimize stress and adjust behavioral patterns? The age we live in

has increasingly been recognized as an age of stress, a time in which stressful factors press in from every side. Attempts to escape the grip of stress are evidenced in the heavy use of alcohol, tranquilizers, and sedatives, and in the popular techniques and philosophies such as encounter and sensitivity groups, meditation, Zen, biofeedback, and in more recent years, depression and wellness seminars offered by various hospitals, churches, physicians, and other organizations.

Stress has been said to be the body's physical, mental, and chemical reaction to disruptions, which prepared one to handle being both good and bad. According to Selye (1974) stress is needed for alertness and the performance of high quality work. In emergencies it is needed as a source of increased energy and strength. Stress then can be said to be the mobilization of bodily defenses in response to a physical, psychological or social threat.

The Institute for Social Research at the University of Michigan for several years has conducted a series of research efforts investigating the consequences of various organizational factors on the health and emotional well-being of the members of organizations. Their findings correlated the relationships between stress and illness as well as began to pave the way toward ways of buffering one's self from the impact of strain-inducing events (French and Caplan, 1972).

Considering that a great deal of attention has been given to females in the workforce within the last few years, it is reasonable that questions are beginning to form concerning females adaptability to the stress within the working organization. Woocher (1986), president of the Career Resource Center recently emphasized some considerations concerning stress and females. Woocher reported that the United States

Labor Department expects three out of five females will be in the work force by 1995. When and if a female makes the decision to enter the workforce, she is faced with a number of factors to consider. Many of these pertain to home and family life as well as the workplace. Fifty-eight percent of the females have families and have the need to provide as well as possible for their offspring. Also females, on the average, earn about 60 percent of what men earn within the same occupational category, according to Labor Department information. These factors may cause a ripple effect on the personal and professional satisfaction of individuals. Considering the issues and emphasis on the female population and the changing role of females today, it seemed reasonable to the researcher that a comparison of the stress reactions between males and females would be of interest to organizations in selecting individuals for promotions as well as determining capabilities, and goodness of fit of individuals in positions of management and training. Therefore the need for this study developed as a result of inquiries into several organizations and their approach to identifying and combating the stress of employees. Reports from these inquiries indicated that stress may have notable effects on performance and production. It was suggested that a study be developed to test the stress reactions or responses of the male and female trainers and managers within organizations.

Statement of the Problem

National employment statistics show that the number of females entering the labor force is steadily on the rise. According to the United States Department of Labor (1986) females hold the majority of

professional jobs in the United States. Out of 13,847,000 professional jobs in the nation in March of 1986, females held 6,938,000 and men 6,909,000. However, many of these females are still being paid less than males who hold the same position (Ehrenhalt, 1986). According to studies conducted by the National Education Association (NEA) (1983) some of the reasons cited for not recruiting females into the ranks of administration and management were: females are less committed to their careers, females are more emotional and less rational then men and hence could not handle the pressures and stresses associated with administrative and managerial responsibilities. This study sought to question the validity of these assertions. Specifically it sought to compare the stress categories of male and female American Society for Training and Development members to determine whether there were statistically significant differences in their categories and whether females experienced more or less stress than males.

Purpose of the Study

The purpose of this study was to determine if there was a statistically significant difference in the stress categories of male and female members of the American Society for Training and Development. This group was selected because of their specific role in designing programs and training individuals in management and human resource development; and, because they assist in businesses, in educational organizations and in government organizations and service fields. It was felt by the researcher that this group would elicit information which would be usable in research concerning stress with males and females and organizational management and training in future studies.

Hypotheses

In accomplishing the purpose of this study the following null hypotheses were tested.

Ho_1: There is no statistically significant difference between the stress categories of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised (TSSR).

Ho_2: There is no statistically significant difference between the categories of stress producers of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_3: There is no statistically significant difference between the categories of stress coping mechanisms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_4: There is no statistically signficant difference between the categories of symptoms of stress of male and female members of the American Soceity for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_5: There is no statistically signficant relationship between the stress producers, stress coping mechanisms, and stress symptoms subscales and the total stress scale of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Definition of Terms

The following definition of terms were used throughout this study:

American Society for Training and Development - This is a non-profit educational association of more than 23,000 persons serving the professional needs of practitioners, administrators, managers, educators, and researchers in the field of human resource development. These individuals design and administer training and management development programs in all types of business, industrial, educational, government, and service organizations (Drake Beam Morin, Inc., 1960, p. 4).

Type A Behavior Characteristics - Restless, inability to relax, constant striving, impatience, egotism, fatigue, low sexual interest, and reluctance to express emotions (Howard, Cunningham, and Rechnitzer, 1977, p. 826).

Type B Behavior Characteristics - Relaxed, little need for achievement, non-competitive, easily satisfied, unconcern for time frames (Howard, Cunningham, and Rechnitzer, 1977, p. 827).

Assumptions

The following assumption was relevant to this study: The members of the American Society for Training and Development who answered the questionnaire were accurate and honest in their responses.

Limitations

The study was limited to the members of the American Society for Training and Development within Region Seven. This included the States of Oklahoma, Texas, Louisiana, Arkansas, and New Mexico.

Subjects

The subjects of this study were male and female members of the

purposively selected chapters of the American Society for Training and Development within Region Seven. This region includes Oklahoma, Texas, Louisiana, Arkansas, and New Mexico. This organization was selected because of the involvement it has with business, industry, educational, government, and service organizations.

CHAPTER II

REVIEW OF LITERATURE

Historical Developments

Bernard, a nineteenth century biologist, thought that the "seeds" of disease were all around and inside human beings all the time. He thought that the disease or "dis-eases" had no effect on the body unless the body was in a state to receive one of them. Most of the time, according to Bernard, the body maintains an equilibrium that resists disease and the "seeds" cannot grow (Adams, 1980).

Early work in the area of stress tried to identify general patterns of response to stress. As far back as 1929 Cannon established the role of the sympathetic nervous system and adrenal medullary system in animal responses to threatening stimuli. In order for survival animals must react quickly to environmental life-threatening challenges. Sometimes the reaction is to fight and sometimes the reaction is to take flight. Cannon called this the "fight or flight reaction" and showed that it is associated with activation of the adrenal medullary system, releasing catecholamines that result in increased cardiac output, arterial pressure, and heart rate. According to Cooper (1983), Cannon's work subsequently led to the discovery of a great many neuroendocrine responses to psychosocial stimulation.

In the 1930's Selye (1974) studied animals exposed to noxious

stimuli such as cold, toxins, and traumatic injury. Selye (1974) demonstrated the importance of the adrenocortical system in response to external stressors. Selye discovered in his work with rats that by injecting them with toxic gland preparations that this caused reactions such as enlargement and hyperactivity of the adrenal cortex, atrophy of the thymus gland, and lymph nodes and gastrointestinal ulcers. He later concluded that organisms have a pattern of stereotyped responses that become evident in response to nonspecific stimuli. He called this the general adaptation syndrome (GAS), which is made up of three stages. When an organism is confronted with a stress the first response is alarm, the adrenocortical secretions rise with general sympathetic arousal. Next the stage of resistance begins, and there is a decrease in adrenocortical secretions and a return to normal body functioning. If the threat continues, the adrenocortical levels are again increased and may eventually be depleted, leading to exhaustion and ultimately, in some cases, death.

In relating this to humans, for instance if an individual was involved in a major disaster (fire or flood), or if an accident suddenly occurred, then his body would react with the secretions and responses discussed. If incidents kept happening over and over to cause the individual's body to continuously react, then the adrenocortical levels would become depleted and the body would become weakened and more susceptible to disease or illness.

One of the major contributions of Selye (1974) was his theory that stressors affect individuals differently. He postulated that this may be based on many "endogenous factors" such as genetic disposition, sex, age, and childhood training, and "exogenous factors" such as drugs,

dietary deficiencies, and physical environment, that inhibit or enhance individual stress responses.

These two response patterns identified by Cannon (1929) and Selye (1974) may seem to be distinct, however, there is research to demonstrate a close connection between the two. For instance, Henry and Stephens (1977) demonstrated that the important factor differentiating between the two responses is the extent to which the organism can control the stimulus. In a number of studies these researchers showed that when organisms were challenged but given the opportunity of exerting control over the environment, they demonstrated increased activity and aggression and responded to the challenge with activation of the amygdala and sympathetic adrenal/medullary response pattern described by Cannon in 1929. On the other hand when organisms were not given the possibility of such control but instead were immobilized or defeated, they showed a withdrawal response and the activation of the adrenocortical hormones described by Selye (1980).

Frankenhauser (1980) supported the work of Henry and Stephens and demonstrated that situations such as monotonous or aggressively competitive performance tasks, that require effort along with distress or negative affects are associated with activation of both adrenergic and adrenocortical systems. Situations that require effort without distress such as simple reaction-time tasks, activate the sympathetic or adrenergic system and supress the secretion of cortisol.

Although many researchers have accepted Selye's (1974) theory of the nonspecific nature of stress, there has been some debate about it. One opponent, Mason (cited in Freese, 1984), Division of Neuropsychiatry at Walter Reed Army Institute of Research, maintained that other

hormones are involved in stress other than the pituitary-adrenal system. Mason questioned the nonspecificity of the stress response. Mason thought that psychological stressors set off other hormonal systems besides those activated by the physiological stressors such as cold, heat, and electrical shocks.

Even with the debate, there has been no argument about the importance of the role stress plays in disease or that stress affects both our living and our dying. Freese (1984, p. 10) concluded that stress is a "large complex area of physiological, psychological, and social problems at several levels."

Overview and Definition of Stress

Though the word stress is often used by doctors and the public, it undoubtedly has different meanings to different people. Many medical scientists limit the word stress to the bodily response that take place when an individual is confronted by environmental or other changes. These responses may include physical reactions such as a hormonal and biochemical changes as well as psychological changes. Stress then could be said to be the mobilization of bodily defenses in response to a physical, psychological or social threat, what Cannon called the emergency "alarm" reaction.

The Institute for Social Research at the University of Michigan conducted a series of research efforts for several years investigating the consequences of various organizational factors on the health and emotional well-being of the body to any demand. So, to some degree every demand made on the body is specific. Heat, cold, fear, sorrow, muscular exertion, drugs, and hormones elicit highly specific responses.

Heat produces sweating, cold produces shivering, exertion affects the muscles and the cardiovascular system. All these have one commonality: they increase the demand for readjustment, for performance of adaptive functions which re-establish normalcy. This rise in the readjustment requirement is independent of the specific activity which caused the increase. Therefore the response is considered nonspecific. The non-specific adaptive response of the body to an agent or situation is always the same no matter what the stimulus. The variation is the degree of response which depends on the intensity of the demand for adjustment. So it does not matter whether the stress producer is pleasant or unpleasant. It may be difficult to see how such essentially different conditions provide an identical reaction in the body; however, this truth has been experimentally verified (Selye, 1974).

The recognition of the importance of control over stress indicates the roles that can be played by both the stressor situation and the individual organism in determining responses to stress. Lazarus (1976) postulated that one essential factor in the response of the individual to stress involves the person's interpretation of the stressor and the manner in which the person copes with the situation. Therefore, if a stressor does not outweigh the ability of the individual to cope effectively, the effects of stress will be minimal. If the stress is prolonged and the coping is ineffective, the effects of stress will be apparent to the individual by the body's response. According to Lazarus (1976) coping involves two processes, direct action, and palliation, including denial. Each of the processes can play a role in determining responses to and the effects of, stress. The relationship of stress to disease appears to be determined by such aspects of the

situation as the control it permits and by the characteristics of the individual.

In accordance with this information Collins (1982) reflected on some conclusions concerning stress. He said that what may be stressful to one person is not necessarily stressful to another. In other words whatever is stressful depends on the individual. Collins also maintained that particular circumstances have a great bearing on what is stressful. And, that knowing what is going to happen is less stressful than anticipating the unknown. Collins also postulated that the most important issue is the ability to control situations, which goes along with previous research conducted by Lazarus (1976) and Henry and Stephens (1977).

The trend in Western countries today is emphasis on the changing roles of the female. The number of employed females has grown to 43 percent compared to 37 percent of employed males over the past 25 years. This information elicits questions concerning the effects this trend will have on the health and well-being of females in the workforce. For instance, will females begin to suffer stress related illnesses, burnout, depression, and despair, that men suffer as members of the workforce? One study in England and Wales reported that 41 percent of all deaths in the age group of 25 to 44 prime age of most people within the workforce, were due to cardiovascular diseases (Cooper, 1981).

Stress and the Body

Some experts believe stress is a factor in every disorder from colds to cancer. Hinkle (cited in Freese, 1984), Cornell University Professor of Medicine, studied 24 females similar in age, race, social

class, and family structure. Blood studies proved that several were infected with the flu virus; however, the flu symptoms they suffered coincided closely with their periods of stress; not with the flu virus.

One study at the University of Michigan by Monto and Ullman (cited in Freese, 1984) reported observations of 15,000 respiratory infections among 5,000 people in the community nearby. The study cited that many more respiratory infections began on Monday than on any other day. The researchers saw this as related to psychological and other similar stresses.

Every disease causes a certain amount of stress, since it makes demands for adaptation upon the organism. In turn, stress has a role in the development of every disease; the effects of stress are added to the specific changes characteristic to the disease (Freese, 1984).

Cotellesse (cited in VanDeventer, 1985) of the Natale Institute declared that stress left unchecked and misunderstood can be a killer. She reported that approximately 50-70 percent of the complaints individuals take to physicians are the result of the three stages of stress: alarm, resistance (when the body tries to fight off the stress), and exhaustion. It is in the latter stage that individuals suffer heart attacks, ulcers, cancer, hardening of the arteries, or mental illness. Cotellesse maintains that stress occurs in two forms: external and internal. External stresses are those where the locus of control is perceived as outside the realm of the person's responsibility. When an individual succumbs to external stress he feels no control over what is happening. Then the individual becomes ineffective in coping with stressful events and only creates an endless cycle of stress symptoms, disease and more midmanagement of life events (Figure 1). A person with an internal

Job Stress	Individual Stress
-Hours worked per week	-Job dissatisfaction
-Deadlines	-Job tension
-Phone calls and meetings	-Self-esteem
-Task difficulty	-Threat
	-Embarrassment
	-Cholesterol
	-Heart rate
	-Skin resistance
	-Smoking

Source: Adams, J. D. Understanding Stress. San Diego, CA: University Associates, Inc., 1980.

Figure 1. Sources of Stress

locus of control feels what happens to them depends upon their own behavior and takes responsibility. These individuals are effective in coping with stressful events which allows them to enjoy good health, success, solve problems effectively, and become more productive.

Another study concerning stress and the body was conducted by Haynes and Feinleib (1980). These men conducted research with samples from the Framingham Heart Study whose main purpose was to identify the precursors to heart disease in Framingham, Massachusetts. This research was conducted with homemakers, working females, and males. The main finding of Haynes and Feinleib was that working females did not have a significantly higher incidence of heart disease than housewives and their rates were lower than the rates for working males. Their findings also showed that working females experienced more daily stress, marital dissatisfaction, and aging worries, and were less likely to show overt anger than either homemakers or males.

Weiss (1986), a specialist in stress reduction courses at the Pentagon and in Maryland, stated that stress affects different people in different ways. Some individuals suffer tension headaches, others may have bouts of anxiety or feelings of fear or panic. Still others display behavioral effects, sleep patterns or appetite change and sexual dysfunctioning. Weiss listed some symptoms of stress as being: tense muscles, backaches, racing heart, shortness of breath, increased perspiration, cold hands and feet, increased usage of alcohol, tobacco, or drugs, only to mention a few.

Cobb and Rose (cited in Freese, 1984), in their studies comparing air traffic controllers and second-class airmen, found evidence of three diseases in the stress filled air traffic controllers:

hypertension, peptic ulcers, and diabetes. These occurred several times as often among air traffic controllers as among the second class airmen.

The fact that the same stressor can cause different lesions in different individuals can be traced to"conditioning factors" (endogenous and exogenous) that can enhance or inhibit the stress effect. Under the influence of these conditioning factors, a normally well-tolerated degree of stress can become pathogenic and cause diseases. Then it affects those parts of the body that are sensitized both by these conditioning factors and by the specific effects of the eliciting agent (Selye, 1974).

Stress, Personality, and Emotions

Research conducted on the effects of stressful situations found that "Type A" individuals are more likley to develop heart disease in middle age than "Type B" individuals. Freidman and Rosenman (1974) cardiologists in San Francisco, describe these personalities:

> Type A: These people are hard-driving, conscientious, and time oriented. They work well with deadlines. They overload themselves and frequently are behind schedule. They are tense individuals, who are easily angered, and overly competitive. Type A individuals are easily upset, and most likely perfectionists. They seldom use sick leave, are visibly restless, and constantly push themselves. They are always geared for action.
>
> Type B: These people are easy-going, relaxed, and patient, The Type B personality enjoys leisure time while Type A personality works at having a good time. Type B individuals do not have as intense a need to excel and are easy on themselves, as well as more accepting of others.
>
> Most people fall somewhere between the two extremes. Also Type A characteristics can be activated when the need arises. It is possible for people to modify and change their behavior, and it is agreed that those who change pure Type A behavior

> are at least as productive as formerly and are less stressed (Chesney, Eagleston, and Rosenman, 1980, p. 255).

Newer studies strongly indicate that almost every ill the body contracts can be influenced, positively or negatively, by the mental attitude of an individual and his effectiveness in handling stress (Bienvenu, 1984).

Cousin's (1979) book, Anatomy of an Illness, described the powerful role the mind has over illness and how positive mental attitudes can assist individuals to become healthy. Cousins also maintained that mental processes have a strong influence, positive or negative, on physical and emotional reactions to stress. In other words, negative images and self-talk produce anxiety and psychosomatic reactions such as headaches, fatigue, and upset stomach; positive images and positive self-talk can encourage relaxation, confidence, and a well-being feeling.

In connection with the above information, an article in the Tulsa Tribune (September, 1983) discussed the stress of nurses in the Tulsa Burn Center at Hillcrest Medical Center. The article quoted one nursing supervisor as saying that the stresses of the job are great in number and in the toll taken on the emotions of those nurses involved. The rate of turnover in the center exceeds 12 percent in one month. To reduce the stress the nurses are rotated between "Tanking", (the process by which patients are put in a tank of water and the dead skin removed), "Intensive Care," and the "Convalescent" area. When a nurse requests a transfer it is granted. "The Burn Center is no place for a person unable to cope with extreme pain," stated the supervisor.

Manuck and Garland (cited in Pittner and Houston, 1980) investigated cognitive coping strategies among Type A and Type B subjects.

Their results indicated that Type A and Type B subjects may have different coping styles in situations they perceive as challenging. The subjects were questioned about their perceptions following a set of trials in which they were presented with difficult concept-formation tasks. The Type A subjects self-report indicated that they responded to the challenge in a more active manner and resisted feelings of helplessness to a greater degree than the Type B subjects. Type A subjects employed greater suppression and denial than did Type B subjects in an experiment where they were either threatened with a shock when making errors on a task, or were given negative feedback concerning their performance.

Rosenman's (1970) longitudinal studies concerning the role of personality traits showed that the occurrence of heart disease can be predicted with some success on the basis of the presence of the Type A personality. Rosenman's studies were carried out over a period of four and one-half years using over 3,000 subjects from a wide range of occupational groups. The Type A personality pattern included traits such as high involvement in work, a liking for deadlines, and other job pressures, a tendency to feel overburdened by work and a tendency to take on roles of considerable responsibility. Administrators scored highest on striving (high involvement in work), positive attitude toward pressure, environmental overburdening, leadership, and on an overall measure of Type A called "What I am Like." The administrators also scored highest on flexibility, a personality trait which increases the effect of role conflict on job tension (Rosenman, Freidman, Strauss, Jenkins, Zyzanski, and Winn, 1970).

Social Environment and Stress

Considering the current economic and social problems, the role of social environment in stress takes on more importance than it has in past years. Rabkin and Struening (cited in Freese, 1984) of the New York State Epidemiology of Mental Disorders Research Unit examined the role of certain social factors that may act as stressors in producing disease. They considered the stress of social isolation, of belonging to a minority group, and of role confusion (a highly educated person in a menial job). Rabkin and Struening found that single adults living in a deteriorating central city area in boarding houses with transients about them suffer a high rate of disease. The adult living alone with no family or other close ties was more likely to suffer a variety of physical and mental disorders. Widows and widowers also, showed a high rate of illness, particularly during the first year of bereavement, with heart attacks being a special danger to widowers. In one of their studies, Rabkin and Struening found that widowers suffered a morality rate during this period 40 percent higher than that of married men the same age. Members of low-status ethnic minorities also suffered high rates of physical and mental disorders. Rabkin and Struening listed social changes that are stress related as: sudden disasters (fires, floods, tornadoes) and moving. They found that men who moved a lot had more heart disease than those who did not.

Evidence is beginning to mount that working women are "at risk" in stress related illnesses and other negative social consequences. Hall and Hall (1980) postulated that the main source of stress among two-career families stems from the fact that the number of demands on

the partners exceeds the time and energy to deal with them. Families add a number of problems, particularly when the organizations do little to assist the dual career family in dealing with these difficulties. Wives who are expected to assume the role of both mother and worker have definite problems which should be addressed.

Newberry, Weisman, and Myers (1980) studied the psychiatric status and social adjustment of working women and homemakers. Their research found that homemakers had greater work impairment, feelings of inadequacy, disinterest, and overall work maladjustment than working wives. Working wives were found to be more impaired, disinterested, and inadequate in regard to housework as compared to work.

To study the relationship of common life changes to the onset of illness, Homes and Rahe (1967) developed the Social Readjustment Scale (SRS). Stressful life events and changes such as marital separation, outstanding achievement, and retirement were assigned a point value on a scale from 11 to 100. After administering the scale to several thousand patients, the researchers found that the scores could predict a stress-induced health breakdown.

Other medical and mental health researchers such as Rabkin and Struening also made the point that physical or mental illness may have come first and may have made the individual more susceptible to the life event in question, rather than the other way around. Rabkin and Struening (cited in Freese, 1984) reported in Science magazine:

> Divorce can be regarded as life change contributing to depression, but depression in some cases may be a contributing factor in divorce . . . events on the Social Readjustment Rating Scale checklist are often symptoms or consequences of illness . . . not the cause of the illness (p. 5).

Organizational Stress

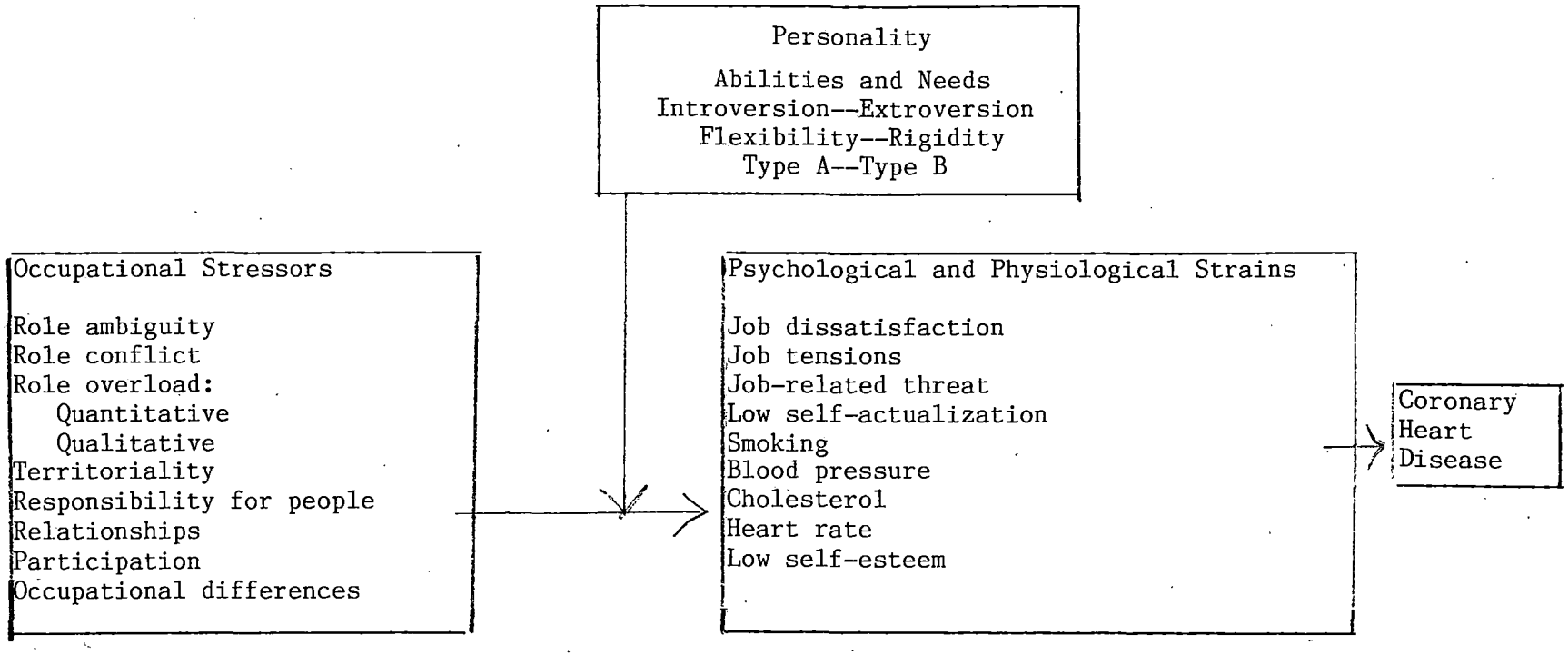
> Morale is the single most important factor in influencing job satisfaction and output. It has no substitute. Hands can be hired but they are of little value if the man's heart does not go along with them. Tremendous capacity is of no value . . . if the man possessing it does not feel encouraged to use his potential. It is usually morale, rather than aptitude that limits output (Ecker cited in Pyles, 1984, p. 18).

In modern society results of the technological revolution are becoming increasingly evident. Evidence of this includes greater worker mobility, increased education levels, and more influence of workers in the decision-making and actions of management. Large organizations have for a long time, put pressures on the individual. By applying these forces or pressures, the organizations were able to control or influence an individual's behavior toward particular goals or ideas and direct his encounters and interactions toward or away from others. Conformity to organizational norms has been procurable at a price most often thought of in terms of salary or payment. What is not tallied in the reports of organizations are the "prices" which the organization incurred for insisting members adhere to organizational policies. These are cost in terms of job related pathologies of the individuals who make the organization a success. These pathologies can manifest themselves in forms from passive apathy to job dissatisfaction and depression in some cases, violent acts directed against the organization.

In 1957 the Institute for Social Research at the University of Michigan organized a research program of the effects of the social environment; principally the effects of the social environment on individual stress. Some of the variables researched included: job dissatisfaction, tension, poor adjustment, physiological disturbances

such as high blood pressure and coronary heart disease. Studies by Russek in 1965 revealed that different specialties within a profession had different rates of heart disease. For instance, the general practitioners had higher rates than the dermatologist or radiologist. Similar differences were found for lawyers, dentists, and other occupations. However, the data did not reveal why one occupation has more disease than another (cited in Adams, 1980). The occupational stresses listed in the first box of Figure 2 were the major ones found to be related to individual stress by the Institute study. The first horizontal arrow represents the central set of hypotheses concerning the effects of each of the job stresses on one or more of the measures of psychological and physiological stress. These symptoms were hypothesized to be risk factors, or contributory causes in heart disease as indicated by the second horizontal arrow. To clarify these occupational stressors, a brief interpretation follows:

> Role Ambiguity: lack of clarity in one's work which resulted in dissatisfaction, threat, under-utilization and a sense of futility.
>
> Role Conflict: conflicting demands or apparently overlapping responsibilities which resulted in dissatisfaction, tension, threat, and increased heart rate.
>
> Quantitative and Qualitative Role Overload: when one had too much to do or, work that was beyond one's capabilities which resulted in dissatisfaction, lowered self-esteem, threat, raised cholesterol levels, and increased smoking and heart rate.
>
> Territoriality: when one had to cross organizational boundaries regularly, such as being an administrator in a scientific setting, the result was, one experienced quantitative and/or qualitative overload and the attendant strains.
>
> Responsibility for People: more or less responsibility for others than was desired which led to increased smoking, blood pressure, and cholesterol levels.



Source: Adams, John D. Understanding and Managing Stress. San Diego, CA: University Associates, Inc., 1980.

Figure 2. An Outline of a Theory: How Organizational Stresses Affect Individual Strains Contributing to Coronary Heart Disease

Note: The horizontal arrows show the effects of environmental stresses on individual strain which in turn affects heart disease. The vertical arrow shows the conditioning effects of personality variables.

> Relationships: poor relationships were a prime cause of role ambiguity and role conflict.
>
> Participation: high authentic participation which resulted in low psychological strain, positive attitudes toward work and high productivity.
>
> Occupational Differences: administrators in the scientific community were found to have the highest incidence of quantitative role overload and the most occasions to cross organizational boundaries. They also experienced coronaries at three times the rate of scientists in the same research center (Adams, 1980, p. 17).

Another factor having to do with organizational stress is "burnout". Paine (1981) in his examination of the burnout phenomenon said that, "burnout is the progressive deterioration in work and other performance, resulting from increasing difficulties in coping with high and continuing levels of job related stress and professional frustration" (p. 30). Burnout also involves guilt about not really performing at best, feelings about being trapped, being angry, paranoia and other inappropriate conditions. Paine concluded that burnout involves a process which leads to the burnout stress syndrome. And, that individuals are primarily responsible for their own reactions to stress on the job and that burnout must be understood as one of the serious organizational problems and should be dealt with responsibly by the organization. According to Paine, because of the differences in organizations and individuals, prescriptive plans to prevent or reduce and treat the burnout stress response are imperative for solutions and treatment.

Another article on burnout by Reed (1979) stated that according to the National Education Association, many teachers, especially veterans, with seven to ten years experience are becoming increasingly bored, disillusioned and dissatisfied with their jobs. And, that encouragement and job sharing positions, as well as involving teachers

in decision-making processes will combat feelings of alienation and powerlessness. Also, increasing self-esteem by placing veteran instructors in charge of newer employees will inspire and guide them. It appears that the educational organizations are researching the field concerning the stresses of the profession and have begun to address the problem.

Ryerson (1981) in her report on teacher burnout stated that the consequences of burnout created grave problems in the public education system. She stated that administrators and teachers alike must understand who and what their responsibilities are in order to develop programs to alleviate the problem. Ryerson suggested management programs in which the success would depend upon commitment of teachers and administrators. She cited several organizational characteristics which are necessary in implementing such a program. Some of these were: strong peer support systems, teachers' involvement in decision-making and planning, management training, flexible scheduling, opportunities for advancement in academics as well as financially. Ryerson stated that "the most effective method of treating stress and burnout is commitment to a joint effort for improvement" (p. 41).

Quick and Quick (1979) maintained that organizations should maximize "eustress" (euphoria and stress, a growthful adaptive healthy state of pleasurable arousal), rather than trying to do away with job stress or destructive stress. These researchers postulated that employee stress can be managed by using two levels of techniques. Level I techniques which analyze and restructure job roles to reduce distress and provide greater job satisfaction; and, Level II techniques which are preventive management actions, are primarily individual.

These techniques try to inhibit the fight or flight response before it happens, or to provide a means for the individual to rid himself of the distressful consequences of the response.

Stress Tolerance

The stress response according to Selye (1974), was considered to be a nonspecific physiological and psychological chain of events triggered by disruption to an individual's equilibrium or homeostasis. The reaction was the same regardless of the stressor; however, each individual's outward reaction to stress may be different from another's. The events leading to equilibrium involved the autonomic nervous system and the endocrine system, as well as other systems within the body. These systems combined to increase cardiovascular functions and decrease gastrointestinal functions, thus equipping the individual to fight or take flight. The triggering of this response often, over long periods of time, caused wear and tear on the system; therefore, increasing the risk of illness or emotional dysfunction. It increased the likelihood that latent disease and emotional distress would become manifest. The amount of stress it takes to trigger this or which illness would occur was different for each person and was based on factors such as heredity, personality, habits, and past accidents and illness. According to Adams (1980), concerns for the impact of stress on the health of managers and their sense of well-being and productivity were found to be very high in most organizations. Increasingly managers are becoming more aware, both in financial and in human terms, of the costs of the fast-paced deadline oriented ways of operating. This pace of change and the daily pressures of life in general serve to compound the pressures of work, often with costly results.

Women as administrators face issues that are absent for most men in the same position, according to Woocher (1986). Although some working women choose the stress of employment to avoid the stress of the undesirable role of homemaker, women still undertake the primary responsibility for parenting and domestic life. One challenge for managers or administrators would be to seek enough stress, yet to manage his or her stress reactions when they went beyond stimulating top performance.

How a person begins to respond to stress provides important clues to the management within organizations concerning the tolerance or reduction of that stress. The differences between the perception of stress and the comfortable ability to meet it, is tension. For instance, an administrator may cause distress by providing an abundance of data upon which to base decision-making. Results from this stress overload may be apathy or stagnation.

According to Giammatteo (1980) the development of tolerance occurs through learning and training that some feelings are acceptable and others are not. For instance, crying, as an expression of sadness for boys or men is considered unacceptable, yet the expression of anger is condoned and reinforced. Certain feelings are overlearned because they provide high payoffs or stimulation. Tolerance is related to those things at which individuals are most practiced. For example, people are more practiced at showing anger than sadness. The behavior that is more practiced and acceptable will surely surface later in life. Stress feelings will be more intense and the internal reaction becomes more intense as well.

Manuso (1979) stated that stress is a:

> Pattern of biochemical functional and structural change that is involved in coping with any increased demand upon vital activity, especially adaptation to new situaitons.
>
> Stress can cause a variety of well known physical and mental disorders including headaches, allergies, ulcers, hypertension, and heart disease (p. 23).

The key to reducing the effects of stress according to Manuso is learning to regulate the system internally. To control stress on a continuing basis. Manuso recommends learning deep breathing techniques or some form of relaxation such as meditation or biofeedback training.

Another advocate of biofeedback is Geiss (1986) of the Center for Behavioral Medicine, Tulsa, Oklahoma. Geiss used biofeedback assisted relaxation techniques with children and adults. Biofeedback measures the level of nerve activity in the muscles. Geiss stated that many individuals' tension levels can be relaxed away by concentration and practice. And that people need to know they can control their tension, and biofeedback demonstrates that they can. According to Geiss, "kids are better about relaxing than adults" (p. 4).

Considering stress tolerance within the education field, a report by Muse (1981) of the National Education Association Professional Development Office indicated that 45 percent of the teachers surveyed said that they would not choose teaching as a profession again. One of the reasons for this decision is the stress involved in the profession. The report by Muse outlined a policy adopted in 1978 by the Association to assist state and local associations to develop and facilitate recognition, prevention and treatment of stress and stress related problems. The program provides a history of research on stress that connects stress symptoms to physical and psychological health.

The content of the program provides techniques for individuals in stress management and association strategies to minimize teacher stress. This report is one of several which inform the public that the stress syndrome has reached into the education field as well as other professional fields.

Stress and the Sexes

The value of individual characteristics in determining stress responses to challenges within the environment has been called to attention by research on Type A behavior among females. Even though the responses of Type A and Type B females have been shown to be risk factors in coronary heart disease (CHD), the pattern of difference to laboratory stressors was different than those found with Type A and Type B males (Haynes and Feinleib, 1980).

Dembroski (1979) replicated Haynes and Feinleib's study by varying the extent of challenge in instructions. Dembroski found that regardless of Type A behavior ratings, the females in his study showed fewer cardiovascular responses than males to the reaction-time tasks. Additionally, between females (Type A and Type B) no differences in response occurred, except that the Type A subjects who were also rated high on hostility potential, responded with greater systolic blood pressure changes than both Type B subjects and Type A subjects who rated low in hostility potential.

Frankenhauser (1979) reported that females tend to respond to achievement demands with fewer increases in catecholamine excretion than did males. The sex difference was observed in laboratory studies of subjects from ages four to 35. In responding to natural stressors

such as a six hour matriculation exam, females showed significant increases in epinephrine secretion, but the rise was even greater for males. The amount of cortisol secretion showed a similar pattern of sex differences in response to this stressor. Even though there were differences in arousal, the performance of females on all of these tasks studied was not lower than the performance of males. Where differences in performance were observed, the observation inclined toward the females. Frankenhauser suggested that females may have a more economic method of coping with stressors and that this may contribute to sex differences in health.

In addition, studies conducted by Collins and Frankenhauser (1978) there appeared evidence that coping responses may be learned. These researchers found that females who had chosen a nontraditional female role, for instance, engineering, showed increases in epinephrine secretions to a cognitive-conflict task that was almost equal to those found for males in engineering.

In Block's (1973) study it was found that females were more sociocentric and more personalistic than males, while males were more formalistic than females. These findings fit the differentiated sex role emphasis that males and females receive from an early age. Block found for example, that the usual socialization process for boys starting early in elementary school reflected an emphasis upon the virtues of the Protestant Ethic: achievement and competition, control of feelings and rule conformity. For girls, the emphasis was on close interpersonal relationships, showing and receiving affection, being expressive, aesthetic, and reflecting on life. These different developmental patterns eventually become a strong part of the self-concept of the two sexes and are reinforced constantly and consistently by the sex role

stereotyping within society.

Croteau and Burda (1983) reported that many researchers have begun to identify problems in the lives of men as related to sex-role socialization. Meinecke (1981), Harrison (1978), and Waldron and Johnson (1976) have all presented the idea that the shorter lifespan of males is due to societal sex roles. The masculine obsession with success and hard work have been implicated in the coronary-prone "Type A" behavior pattern in young males (Rosenman and Chesney, 1982).

Croteau and Burda (1983) maintained that sex role socialization is a restrictive process and that it causes males to deny important aspects of themselves, which can lead to difficulties in the lives of many males. Some of the problems they report were: lack of intimacy and emotional expressiveness, violent behavior, and a variety of health related dysfunctions.

According to Pleck and Lang (cited in Woocher, 1986) except for a a small minority of highly educated men who are more psychologically involved in work roles, family role satisfaction is more highly related to overall well-being than work satisfaction. In the same report it was said that husbands with working wives have lower levels of job and life satisfaction than husbands of non-working wives. And, a husband's perception of adequacy as breadwinner is a central component to his mental health.

Information from Adams's (1980) book stated:

> The United States Clearinghouse for Mental Health Information, recently reported that United States industry has had a seventeen-billion dollar annual decrease in its productive capacity over the past few years due to stress induced mental dysfunctions. Similarly, other studies reported to the Clearinghouse estimated even greater losses arising from stress induced physical illnesses.

> The need for increased competence in stress management is clear.
>
> According to the Clearinghouse information, other specific examples of the costs of stress included: over 20 million people in the United States have hypertension. About the same number are alcoholic. Nearly 35 percent of all deaths in this country are due to myocardial infarctions (heart attacks). Another 11 percent are due to strokes. Side effects or abuse of drugs is the eleventh leading cause of death in the United States. An alcoholic executive (five to eight percent are) costs his organization an average of four thousand dollars per year in lost time and wastes. Hundreds of thousands of persons are killed or badly injured in industrial accidents each year. Estimates of the number of suicides per year in the United States vary from 25,000 to 50,000. One attempted suicide in eight is successful. Occupational factors are estimated to be involved in 150,000 cancer deaths. Over 120 billion dollars per year is spent on health and mental care (p. 179-180).

Summary

It appears from the review of literature that stress and stress related illness is indeed a problem which needs attention in the workplace and in society in general. Research has shown that stress may effect all or any professions and organizations.

Research dating from 1929 to the present indicated that stress labeled by various names can be linked to a number of emotional, mental, and physical difficulties such as depression, increased alcohol consumption and smoking, marital problems, heart disease, high blood pressure, and cancer. Research indicated that stress appears more often in certain personality types than others.

Additionally, research suggested that awareness, exercise, good health habits, and relaxation techniques help alleviate the impact of stress. From the review of literature it has been found that some differences exist in males and females concerning stress and the

difficulties that arise from it. Various types of studies have attempted to explain the stress response to various types of stimulation, both mental and physical, and the reactions which stress evokes. There are many studies concerning males and females, however, the studies comparing the actual stress categories were few in number.

The researcher hopes that this review will enlighten the reader on the background of stress and its ramifications. Also, that the study will provide information and influence organizations to conduct their own studies in the measurement of stress between males and females and the difficulties it may cause within organizations concerning promotions, goodness of fit of individuals to positions, and selection of individuals in positions of training and management.

Additionally the researcher anticipates that the information gained through this study will assist the American Society for Training and Development in charting effective methods to address the stress differences encountered by males and females within the organization as well as with those they are called upon to assist.

Selection of Instrument

In selecting the instrument to best derive a stress index for this study, a number of instruments were considered. Among these were the Tennessee Self Concept Scale, which has been used extensively in research and clinical assessment. This instrument suffers from two defects: (1) the absence of information regarding the internal structure of the scale, and (2) the high degree of overinterpretation relative to the data base. The Tennessee Self Concept Scale provided scores for 29 variables, with intercorrelations among scores but no factor analysis was

reported. The scoring method was cumbersome and extensive (Buros, 1972).

The Eysenck Personality Questionnaire was another instrument considered for use in this study. The rejection was due in part to the dearth of information contained in the manuals and the variety of dimensions measured although the Neuroticism scale appeared to be a useful measure and correlates well with other personality inventories. The Neuroticism scale measures anxiety. There is good evidence for the relevance of this dimension to a wide variety of life courses (Buros, 1972).

The Tennessee Stress Scale Revised was finally selected as the instrument for this study. It was chosen for a variety of reasons, mainly the construct validity, scoring simplicity, and acceptability by individuals participating in the study. It was easy to read, quick, and provides a good index of stress relating to work and social environment.

CHAPTER III

METHODOLOGY

Purpose

The purpose of this study was to determine if there was a statistically significant difference in the stress categories of male and female members of the American Society for Training and Development.

Permission for Use of Instrument

To obtain permission for use of the Tennessee Stress Scale Revised the researcher contacted the author of the instrument, Dr. Jettie M. McWilliams, Northern Arizona University. Permission was granted in July, 1985 (See Appendix A).

Subject Selection

Before beginning the research for this study, the researcher spoke with the president and past president of the Tulsa Green Country Chapter of the American Society for Training and Development, explaining the project, purpose, and intentions. An offer of encouragement and assistance from both ensued. The researcher was provided with a Directory of the Chapters and Membership for Region Seven. This includes Oklahoma, Texas, New Mexico, Louisianna, and Arkansas. From the Directory of Region Seven the researcher selected three chapters from

each of the states in Region Seven, except New Mexico and Arkansas, where only one chapter each was listed, consequently, only one was selected. Seventeen chapters were selected as potential subjects for the study.

To determine the sample size the researcher used a technique suggested in the National Education Association Research Bulletin (1960). The formula is presented and briefly described below. An illustration presents an explanation of the formula (Table I).

Table II presents the table derived from the formula in Table I and the source of the sample size used in this study.

Collection of Data

On July 3, 1985 the researcher wrote to the president of each selected chapter requesting the participation of the chapter in the project. A brief explanation of the project was included in the letter as well as a time constraint of 30 days for reply. Also included was a self-addressed, stamped envelope for insurance of replies (See Appendix B for letter).

Only four chapters of the seventeen selected did not reply, and no followup action was taken in regard to the four nonrespondent chapters, since all states were represented by the chapters that did reply.

Altogether 13 chapters from Region Seven responded in the affirmative or 76 percent.

On August 3, 1985, the 13 chapters that responded in the affirmative were each sent a letter explaining the project, instructions for completing the instrument, 40 instruments, and a note of thanks for participation. A time limit for return was set for 30 days (See Appendix

TABLE I

SMALL SAMPLE TECHNIQUE

$$S = X2NP\ (1-P)\ -d2\ (N-1)\ -X2P\ (L-P)$$

Where: S = required sample size

X2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.341)

N = the population size

P = the population proportion (assumed to be .50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

TABLE II

TABLE FOR DETERMINING SAMPLE SIZE

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

N=population size
S=sample size

C for letter). A self-addressed, stamped envelope was included for returning the instruments.

A total of 520 instruments were mailed to the 13 participating chapters. Of these, 363 were returned or 70 percent of the total instruments mailed, 350 of which were complete and usable for this study.

Measurement Instrument

The Tennessee Stress Scale Revised was selected as the instrument for this study because of its construct validity, scoring simplicity, and acceptability by respondents. The Tennessee Stress Scale Revised was developed by Jettie M. McWilliams and Janet K. Schnorr, Ph.D. at the University of Northern Arizona. This instrument is a work-related stress inventory for professionals. The Tennessee Stress Scale Revised provides a measure of stress in three areas: stress producers, stress coping mechanisms, and stress symptoms. Table IX will provide scores and categories. The Scale also provides a measure of whether the subject is using positive or negative coping mechanisms. The instrument is comprised of 60 forced choice items. One third of the items are devoted to extracting the stress producers within the individual, one third examines the stress coping mechanisms an individual possesses, and one third identifies the symptoms of stress. The stress producers labeled "P" include items one to 20, the stress coping mechanisms labeled "C" include items 21 to 40, and the stress symptoms labeled "S" include items 41 to 60. All scores are added together to obtain a total score (See Appendix D for instrument).

All variables on the Tennessee Stress Scale Revised were correlated highly with the Neuroticism Scale of both the Eysenck Personality Inventory and the Eysenck Personality Questionnaire (.89) (See Appendix E). A table of the Tennessee Stress Scale Revised norms and mean scores are provided in Appendix F. Also provided are population means and standard deviations as well as symptoms reported most often (See Appendix G and H). These findings are from the data supplied by McWilliams and Schnorr (1983).

Inferential Statistics

Ho_1: There is no statistically significant difference in the stress categories of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

A one-way analysis was performed on the data extracted from the total stress score. The Statistical Package for the Social Sciences (SPSS), second edition, was implemented using the subprogram frequencies, which computes and presents one-way frequency distribution tables, or marginals, for what are termed discrete or categorical variables or variables classified into a limited number of values or categories, and condescriptive (an SPSS control word followed by a list of variables for which the user wishes to have one or more of the descriptive statistics computed) to determine frequencies, percent of participation and measures of dispersion for each of the variables examined in the study (Tuccy, 1975).

Ho_2: There is no statistically significant difference between the categories of stress producers of male and female members of the

American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_3: There is no statistically significant difference between the categories of stress coping mechanisms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_4: There is no statistically significant difference between the categories of stress symptoms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The Statistical Package for Social Sciences was employed for each of the above null hypotheses (Ho_1, Ho_2, Ho_3, Ho_4) using the subprogram Oneway (in other words an Analysis of Variance) to determine if there were significant differences between males and females. To assist in the determination of the meeting of the assumptions of ANOVA, the Bartlett's Box F Homogeneity of Variance Test was employed using SPSS Oneway Statistics options. Subprogram Oneway is limited to problems involving only one independent variable. It does however, provide optional tests for trends across categories of the independent variables; a priori contrasts specified by the user, and a posteriori contrasts. In addition, category frequencies, means, and standard deviations that are computed from raw data can be output on the raw-output data file and used as input on subsequent Oneway runs (Tuccey, 1975).

Ho_5: There is no statistically significant relationship between the stress producers, stress coping mechanisms, and stress symptoms subscales and the total stress scale of male and female members of the American Society for Training and Development as measured by the

Tennessee Stress Scale Revised.

For this null hypothesis (Ho_5) a Pearson Correlation was performed to determine significant relationships between the producers, coping mechanisms, and symptoms subscales and total scores. Again the Statistical Package for the Social Sciences was employed using subprogram Pearson Correlation.

> Subprogram Pearson Correlation computes Pearson product-moment correlations for parts of variables. These are zero order correlations because no controls for the influence of other variables are made. The Pearson correlation coefficient r was used to measure the strength of relationship between two interval level variables. The strength of relationship indicates both the goodness of fit of a linear regression line to the data and when r is squared, the proportion of the variance in one variable explained by the other (Tuccey, 1975, p. 280).

Analysis of Data

In conducting this research and using the population of the American Society for Training and Development, the process of obtaining a sample of that population produced a total of 350 individuals who participated in this study. Of those, 175 of the participants were male and 175 were female. The participants were all members of the Society from within Region Seven which includes Oklahoma, Texas, Louisianna, Arkansas, and New Mexico. The results of this study are based upon the sample obtained from this group.

Upon receipt of the completed questionnaires by return mail, the researcher scored each instrument with a key and recorded the raw scores for each subscale and the total score. All Tennessee Stress Scale Revised derived data were then input to the Statistical Package for the Social Sciences (SPSS) computer program. There were 350 valid

cases input.

A one-way Analysis of Variance was used to calculate the variance of each of the subscores and the total score. These scores were then compared on the basis of male-female respondents. The SPSS was also used employing subprogram Pearson Correlation to determine significant relationships between the producers, coping mechanisms, and symptoms subscales and total scores.

CHAPTER IV

FINDINGS

Inferential Findings

In examining the data several differences appeared to support or refute the hypothesis stated. The results of these are as follows:

Ho_1: There is no statistically significant difference between the stress categories of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The one-way ANOVA assumption of normality was considered by examining the kurtosis, skewness, and central tendency measures. The homogeneity of variance was considered using the Bartletts Box F test. The resulting F ratio of 11.589 indicated a significant difference between males and females on the total stress subscale. Therefore, Ho_1 was rejected. Resulting means are reported in Table III. The means of females were found to be significantly greater at $p < .001$ on the total stress subscale.

Ho_2: There is no statistically significant difference between the categories of stress producers of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The one-way ANOVA assumption of normality was considered by examining the kurtosis, skewness, and central tendency measures. Homogeneity

TABLE III

TOTAL STRESS SCORE ANALYSIS OF VARIANCE

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Probability
B. Groups	1	641.9908	641.9907	11.589	$p < .001$
W. Groups	348	19277.9453	55.3964		
Total	349	19919.9336			

The means of females were found to be significantly greater on the total stress subscale.

of variance was considered using the Bartletts Box F Test. The resulting F ratio of 4.187 ($p<.05$) indicated significant mean differences between males and females on the stress producers subscale. Therefore Ho_2 was rejected. Resulting means are reported in Table IV. The means of females were found to be significantly greater at $p<.05$ on the stress producers subscale than males.

The means of females were found to be significantly higher ($p<.05$) on the stress producers subscale.

Ho_3: There is no statistically significant difference between the categories of stress coping mechanisms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The one-way ANOVA assumption was considered by examining the kurtosis, skewness, and central tendency measures. Homogeneity of variance was considered using the Bartletts Box F Test.

The resulting F ratio of 5.401 ($p<.05$) indicated significant differences between males and females on the stress coping mechanisms subscale, with females having a significantly higher mean. Therefore, Ho_3 was rejected. Resulting means are reported in Table V.

Ho_4: There is no statistically significant difference between the categories of stress symptoms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The normality assumption was satisfied by the kurtosis, skewness, and central tendency measures.

Although the resulting F ratio of 11.959 ($p<.001$) was obtained, only limited interpretation of these results is possible due to the

TABLE IV

STRESS PRODUCERS ANALYSIS OF VARIANCE

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Probability
B. Groups	1	46.8128	46.8128	4.187	*p<.05
W. Groups	348	3890.5906	11.1799		
Total	349	3937.4033			

*The means of females were found to be significantly higher ($p<.05$) on the stress producers subscale.

TABLE V

STRESS COPING MECHANISMS ANALYSIS OF VARIANCE

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Probability
B. Groups	1	48.2857	48.2857	5.401	*p<.05
W. Groups	348	3111.3958	8.9408		
Total	349	3159.6814			

*Significant differences were found on the coping mechanisms subscale, with females having a significantly higher mean.

inability to satisfy the homogeneity of variance assumption for ANOVA. Resulting means are reporting in Table VI.

Ho_5: There is no statistically significant relationship between the stress producers, stress coping mechanisms, and stress symptoms subscales and the total stress scale of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Resulting Pearson Correlation Coefficients for each stress subscale are provided in Table VII. Statistically significant correlations ($p < .001$) were found to exist for all interrelationships of stress producers, stress coping mechanisms, stress symptoms, and total stress subscales, therefore the null hypothesis, Ho_5, was rejected.

Additional Findings

Results of the descriptive analysis of subprogram condescriptive produced the following measures of central tendencies and dispersion. These are reported in Table VIII.

On the stress producers subscale, (P) a mean of 7.5943 and a standard deviation of 3.2767 for males, for females a mean of 8.3257 and a standard deviation of 3.4093, producing an overall mean of 7.9600 and an overall standard deviation of 3.3589.

On the stress coping mechanisms subscale (C) a mean of 7.0571 was derived for males with a standard deviation of 2.8882. A mean of 7.8000 was obtained for females with a standard deviation of 3.0087. An overall mean of 7.4286 was obtained and an overall standard deviation of 3.0089.

On the stress symptoms subscale (S) a mean of 6.2541 and a standard

TABLE VI

STRESS SYMPTOMS ANALYSIS OF VARIANCE

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Probability
B. Groups	1	113.1446	113.1446	11.959	*p<.001
W. Groups	348	3292.4768	9.4611		
Total	349	3405.6213			

*Some limited interpretation of the above results, due to the inability to satisfy the homogeneity of variance assumption for ANOVA.

TABLE VII

PEARSON R CORRELATION COEFFICIENTS FOR STRESS PRODUCERS, STRESS COPING MECHANISMS, STRESS SYMPTOMS, AND TOTAL STRESS SCALE

Producers	Coping Mechanisms	Symptoms	Total
Producers	0.5235 (350) P=0.000	0.3469 (350) P=0.000	0.8060 (350) P=0.000
Coping Mechanisms		3.3862 (350) P=0.000	0.8063 (350) P=0.000
Symptoms			0.7253 (350) P=0.000

Significant correlations (p<.001) were found for all interrelationships of producers, coping mechanisms, symptoms, and total stress subscales.

TABLE VIII

MEANS AND STANDARD DEVIATIONS OF STRESS PRODUCERS, STRESS COPING MECHANISMS, STRESS SYMPTOMS, AND TOTAL STRESS SUBSCALES

	Mean			Standad Deviation		
	Male	Female	Overall	Male	Female	Overall
P.	7.5943	8.3257	7.9600	3.2767	3.4093	3.3589
C.	7.0571	7.8000	7.4286	2.8882	3.0087	3.0089
S.	6.2541	7.3886	6.8200	3.3018	2.8320	3.1238
T.	20.7943	23.5029	22.1486	7.1993	7.6787	7.5549

deviation of 3.3018 was obtained for males and a mean of 7.3886 and a standard deviation of 2.8320 for females. An overall mean of 6.8200 and an overall standard deviation of 3.1238 was obtained.

A total mean for males of 20.7943 and a standard deviation of 7.1993 was obtained. For females a total mean of 23.5029 and a standard deviation of 7.6787 was obtained. A grand total mean of 22.1486 and a standard deviation of 7.5549.

According to the central tendencies and dispersion the stress producers subscale mean score places both males and females within the moderate category (males =7.5943 / females=8.3257). On the stress coping mechanisms subscale, again both males and females fell within the moderate category (males=7.0571 / females-7.8000). On the stress symptoms subscale both groups also fell within the moderate category. (males=6.2541 / females-7.3886). Table IX provides categories according to McWilliams and Schnorr.

Even though this data indicates no differences in categories, the analysis of variance for each subscale shows that statistically significant differences were found between the stress categories of males and females of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

TABLE IX

QUESTIONNAIRE CATEGORIES

Categories	Producers	Coping Mechanisms	Symptoms	Totals
Mild	<6	<5	<5	<16
Moderate	6 - 11	5 - 11	5 - 11	16 - 30
Severe	>11	>10	>11	>30

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

An extensive literature search conducted by the researcher substantiated the existence of the problem postulated as a primary rationale for this study; that males and females encounter pressures and stresses associated with administrative and managerial responsibilities within organizations. And, that these are considered detrimental to the organizational structure as well as to employee productivity.

This information leads to questions concerning how individuals, both males and females, deal with these stresses and others contributing to well being, good health, and optimum productivity. The question arising from the information then, is one that this study sought to address in part, at least.

The purpose of this study then was to determine if there was a statistically significant difference in the stress categories of male and female members of the American Society for Training and Development. And, to provide enlightenment which can be used for management selection and placement as well as counseling for managers, trainers, and other employees within organizations.

Several hypotheses were examined in determining the existence of stress category differences between males and females, these included:

Ho_1: There is no statistically significant difference between the stress categories of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_2: There is no statistically significant difference between the categories of stress producers of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_3: There is no statistically significant difference between the categories of stress coping mechanisms of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_4: There is no statistically significant difference between the categories of symptoms of stress of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

Ho_5: There is no statistically significant reltionship between the stress producers, stress coping mechanisms, and stress symptoms subscales and the total stress scale of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

The Tennessee Stress Scale Revised provided a measure in three areas: stress producers, stress coping mechanisms, and stress symptoms.

The statistical methods used for this study were: a one-way analysis of variance, specifically the Oneway subprogram of the Statistical Package for the Social Sciences, and the Pearson Correlation Coefficient subprogram of the Statistical Package for the Social Sciences.

Purposive samples of 175 in each group (male and female) were constructed using accepted techniques. Data were collected by mail. Three hundred fifty (67 percent of the total sample) individuals responded with completed Tennessee Stress Scale Revised questionnaires by the final deadline.

Statistically significant differences were found between males and females on the stress producers and stress coping mechanisms subscales, but only limited interpretations were possible on the stress symptoms subscale due to the failure to satisfy the homogeneity of variance assumption for ANOVA.

Statistically significant correlations were found to exist for all interrelationships of stress producers, stress coping mechanisms, stress symptoms, and total stress subscales.

Conclusions

The researcher has drawn the following conclusions as a reuslt of this study.

1. There is a statistically significant difference ($p<.001$) in the stress categories of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

2. There is a statistically significant difference ($p<.05$) between the categories of stress producers of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

3. There is a statistically significant difference ($p<.05$) between the categories of stress coping mechanisms of male and female members

of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

4. Only limited interpretation is possible for the stress symptoms subscale between males and females due to the inability to satisfy the homogeneity of variance assumption for ANOVA.

5. There is a statistically significant relationship ($p<.001$) between the stress producers, stress coping mechanisms, and stress symptoms subscales and the total stress scale of male and female members of the American Society for Training and Development as measured by the Tennessee Stress Scale Revised.

6. This study was conducted only to determine if statistically significant differences existed between the members (male and female) of the American Society for Training and Development. It may or may not be valid when considering other organizations.

7. Females, on each of the subscales of the Tennessee Stress Scale Revised (producers, coping mechanisms, and symptoms) produced a higher mean score than males.

8. Considering the results of the analysis of the findings and the examination of the literature pertaining to stress females demonstrated a higher level of stress than males.

9. Evidence also suggested that females have a wider variety of techniques and a greater degree of tolerance than males, in dealing with stressful situations.

10. Females may suffer from traditional conditioning concerning the role of females in managerial and administrative positions.

Recommendations

The research offers the following recommendations:

1. Organizations should be encouraged to institute stress management programs which identify and control stress and its ramifications.

2. Effective counseling in stress management should be introduced early, especially for females, who in general may still be conditioned by tradition from pursuing management or administrative positions.

3. Females should be encouraged to join the ranks of administration and management, assuming that they are equally able to deal with the responsibilities and stresses associated with these positions.

4. A similar study should be conducted with other groups of males and females in administrative and managerial positions to determine if differences exist in categories of stress.

5. This study should be expanded to include employees in other positions within organizations.

6. If these findings are supported by other studies, organizations should take a close look at these findings plus other statistics and perhaps re-evaluate their procedures in the recruitment of individuals into administrative and managerial positions.

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APPENDIXES

APPENDIX A

PERMISSION FOR USE OF INSTRUMENT

Permission is granted to
Maralene Coggins to reproduce
the TSS-R for research purposes
Fall, 1985.

Joelle M. McWilliams

APPENDIX B

COVER LETTER FOR REGION SEVEN CHAPTERS

Date: July 3, 1985

TO: American Society for Training and Development
Chapter President

FROM: D. Maralene Coggins
4517 East 25th Place
Tulsa, OK 74114

I am a doctoral candidate at Oklahoma State University conducting a study for research. Your chapter has been selected from within Region Seven as potential subjects for this research.

The study will attempt to measure stress in males and females, comparing the results to determine if there is a difference in stress between the sexes.

The instrument I am using is brief though informative. It consists of 60 items (2 pages) and can be completed within ten to 15 minutes.

Each participant may remain anonymous if he or she chooses, although I will be glad to report individual findings if the necessary information is included. Results will be available to chapters upon request.

If your chapter would consider assisting in this project it would contribute greatly to my project as well as to research concerning stress. Please indicate by checking "yes" or "no" in the box at the bottom of the page and return it to me in the enclosed envelope. Since time is important please reply within 30 days.

Thank you in advance for your time and assistance.

YES NO

APPENDIX C

COVER LETTER TO INDIVIDUAL PARTICIPANTS

Date: August 3, 1985

TO: American Society for Training and Development Member

FROM: D. Maralene Coggins
4517 East 25th Place
Tulsa, OK 74114

Thank you so much for agreeing to participate in my research project. The instructions are included on the instrument you will be completing. Since my research will examine the differences, if any, of stress categories between males and females, be sure to include your sex. All replies will be kept confidential. The findings of the study will be made available to each chapter upon request. Since time is an important factor I must ask for the completed questionnaire within 30 days. Your chapter president will return all questionnaires in the envelope provided.

Your assistance is greatly appreciated and will contribute to research concerning stress. Again, I thank you.

kp

APPENDIX D

TENNESSEE STRESS SCALE REVISED

Name _____

Sex __M __F

Marital Status: Single__ Married__

Children: Number ___ Ages _____

Number of Pets ___

SUBSCALES
STRESS SCORE

Stress (P) ___ 1-20

Stress (C) ___21-40

Stress (S) ___41-60

Total
Interval _____

Please answer the following:

Y = 1; N = 0

Your job title: Staff__ Mid-Level Management__ Executive__

Avg. hours worked per week _____

Occupational Classification: Business__ Education__ Media__

Government Service__ Medical__ Industry__ Other__

Number of women in your organizational group_____

Number of men in your organizational group_____

Related to my job, I would say my overall level of stress is:

Mild___ Moderate___ Severe___

Directions:

This inventory contains statements dealing with stress that are related to your work. Please read each statement carefully and respond as it usually relates to you. Mark your answers under the columns headed "Yes" or "No".

		YES	NO
1.	I compare my job performance with others in my organization	( )	( )
2.	I take on more responsibility to prove I am as capable as others	( )	( )
3.	I am overly critical of my performance in my job responsibilities	( )	( )
4.	I feel my subordinates resent my authority .	( )	( )
5.	My position forced me to develop a more forceful-aggressive role	( )	( )
6.	I assume a nurturing leadership role	( )	( )
7.	My colleagues do not express sufficient appreciation for my hard work done in their behalf	( )	( )
8.	Higher levels of administration reinfoce me for my work	( )	( )
9.	Meeting constant deadlines at work causes me stress	( )	( )
10.	I feel vulnerable in my work in that my willingness to take high risk tasks may backfire	( )	( )
11.	My personal limitations on the job cause me stress	( )	( )
12.	The idea that I'm not O.K., learned from childhood experiences, affects my professional competencies	( )	( )
13.	I feel that no matter how hard I try at work, I will not receive the recognition I deserve	( )	( )
14.	My professional colleagues assume that I will take a passive leadership role	( )	( )
15.	The frequency of interruptions while performing job tasks causes me frustration constantly	( )	( )
16.	My position makes me feel socially isolated	( )	( )

		YES	NO
17.	Unclear job responsibilities cause me undue stress	( )	( )
18.	I lack experience in major decision making responsibilities	( )	( )
19.	Being placed in a leadership role without authority creates a problem for me	( )	( )
20.	I underestimate my skills and abilities . . .	( )	( )
21.	When I experience stress at work, I set realistic expectations for myself	( )	( )
22.	When work becomes difficult, I feel I have "fallen short"	( )	( )
23.	When I am under pressure at work, I express more hostility	( )	( )
24.	When I am under stress, I am more impatient with others	( )	( )
25.	When I am stressed, I avoid job tasks which are frustrating	( )	( )
26.	When I have work pressures I am able to transcend my stress by seeing the humorous aspects and laugh	( )	( )
27.	When I am under stress at work, I take time for myself	( )	( )
28.	When work pressures increase, I make it a point to get sufficient amounts of rest and sleep	( )	( )
29.	When under stress, I exercise regularly . . .	( )	( )
30.	When I am under stress at work, I become more depressed and withdrawn	( )	( )
31.	When pressure is great at work, I find that my interpersonal relationships deteriorate .	( )	( )
32.	When under stress at work, I turn problems into opportunities	( )	( )
33.	When things are stressful at work, I over-react to criticism	( )	( )

	YES	NO
34. When work is stressful, I am able to identify factors that cause me stress	( )	( )
35. When personal conflicts arise, I prefer to directly confront people	( )	( )
36. When problems arise, I tend to blame others	( )	( )
37. When under pressure, I accomplish more . . .	( )	( )
38. When under stress, I seek support or advice from a close friend	( )	( )
39. When difficulties arise, I allow time to resolve the issue	( )	( )
40. When under stress, I find a cocktail before dinner is relaxing	( )	( )

When work is stressful, I have experienced the following:

41. High blood pressure	( )	( )
42. Excessive smoking	( )	( )
43. Skin irritations	( )	( )
44. Decrease in sexual interest	( )	( )
45. Diarrhea	( )	( )
46. Weight gain	( )	( )
47. Nausea	( )	( )
48. Weight loss	( )	( )
49. Nervousness	( )	( )
50. Fatigue	( )	( )
51. Stomach pains	( )	( )
52. Ulcers	( )	( )
53. Headaches	( )	( )
54. Backaches	( )	( )

		YES	NO
55.	Pain or discomfort which is medically undiagnosed	( )	( )
56.	Tightness or soreness of muscles	( )	( )
57.	Professional burnout	( )	( )
58.	Allergies	( )	( )
59.	Sleep problems	( )	( )
60.	Irritability toward others	( )	( )

APPENDIX E

QUESTIONNAIRE CORRELATIONS

TABLE X

QUESTIONNAIRE CORRELATIONS

TSS-R	EPI Extraversion	EPI Neuroticism	EPI-Lie	EPQ Psychoticism	EPQ Extraversion	EPQ Neuroticism
Stress Producers	.17	.89	.24	.82	.17	.88
Stress Coping Mechanisms	.13	.89	.19	.86	.22	.88
Stress Symptons	.30	.89	.47	.81	.29	.83
Total Stress Score	.29	.89	.22	.89	.23	.83

APPENDIX F

NORMS AND MEAN SCORES, MCWILLIAMS AND SCHNOOR

TABLE XI

NORMS AND MEAN SCORES

Group	Producers	Copers	Symptoms	Total Scale Score
Nurses	9.23	8.27	7.77	24.36
Teachers	8.87	8.00	8.29	25.03
Business	6.00	7.00	7.00	20.00
Industry	7.57	6.14	6.14	18.42
Government Service	5.70	7.47	6.00	19.17
Total Population	8.16	7.84	7.64	23.39

Test re-test reliability (N=152) .88 on all three scales. Producers, Coping Mechanisms, and Symptoms.

All variables on the TSS-R were correlated highly with the Neuroticism Scale of both the Eysenck Personality Inventory and the Eysenck Personality Questionnaire, .89.

Source: McWilliams and Schnoor, 1983.

APPENDIX G

EXPLANATION OF TSSR, POPULATION MEANS, AND STANDARD DEVIATIONS (MCWILLIAMS AND SCHNOOR)

The Tennessee Stress Scale-R (TSS-R) by McWilliams is a Work-Related Stress Inventory for Professionals. The final revision represents 5 years of research with the instrument. The TSS-R provides a measure of stress in three areas: Stress Producers, Stress Coping Mechanisms, and Stress Symptoms. The Scale also provides a measure of whether the subject is using positive or negative coping mechanisms. The instrument includes important demographic data.

The purpose of this particular study was to analyze levels and areas of stress of professionals in the helping professions.

The TSS-R was administered to groups of professionals: (1) Education, (2) Medical, (3) Government Service, (4) Industry, (5) Business, and (6) Counselors. A comparison of these groups was made with the following results:

By Sex - Producers - .03 level significance (females higher)
Symptoms - .01 level significance (females higher)
Copers - no significant differences
Total - .05 level significance

Occupational Groups:

Business and Education - .05 level significance (Education higher); no difference in copers.

Education and Government Service - Producers .001 level (Education higher)
Copers no difference
Symptoms .001 level (Education higher)

We are in the process of establishing national norms on this final revision. The handouts of results on current research that are available to you are based on approximately one-third of the final population (N = 1000).

A summary of selected significant findings, sex differences in responses, and correlations between perceived stress are included. If you are interested in more information or in using the TSS-R, please contact Dr. Jettie McWilliams at:

Department of Educational Psychology
Box 6002 Northern Arizona University
Flagstaff, AZ 86011 (602) 523-5332

Table 1

Population Means and Standard Deviations
for TSS-R (N=156)

	$\underline{n}$	$\underline{s}$
Producers	8.16	3.371
Copers	7.846	3.376
Symptoms	7.641	3.85
Total	23.391	7.995

Table 1 presents the means and standard deviations of a population of 156. These can be used to assess your level of stress compared to overall averages.

APPENDIX H

MOST OFTEN REPORTED SYMPTOMS

Symptoms:	Population (N=156)
83.8%	Report Fatigue
75%	Report nervousness
72.4%	Report irritability
62.8%	Report headaches
60.3%	Report professional burnout
51.3%	Report undiagnosed pain
50.6%	Report sleep problems

VITA

Donal Maralene Coggins

Candidate for the Degree of

Doctor of Education

Thesis: STRESS LEVEL DIFFERENCES BETWEEN MALE AND FEMALE MEMBERS OF THE AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT WITHIN REGION SEVEN

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Tulsa, Oklahoma, April 3, 1945, the daughter of Ledford Girdner and Mina A. Stephenson Girdner.

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