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STRESS IN PARAMEDICS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

John Howard Mason, B.A., M.T.S.

The Ohio State University
1982

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ACKNOWLEDGMENTS

I would like to dedicate this dissertation to my wife Teresa Ann. Without her love and support completion of this research would have been difficult.

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CHAPTER I

INTRODUCTION

While the bulk of stress research has centered around studying stress in traditional jobs that contain little threat to life, some effort has been made to study the stress encountered by health professionals. These people deal almost daily with life and death situations which create much stress in and of itself. Additionally, these workers face the more common job stressors that all workers must confront. Finally, in their private lives, they are confronted with stress exacerbated by the demands of the job including long hours, unstable shift work, and in some cases, low salaries (Greenberg, Valletutti, 1980).

One profession within the health care field that has received little attention in stress research has been the paramedic. This technician is representative of a new breed of professional who carries emergency medical care to the injured and sick outside the confines of the hospital. During the past seven years, some concern has been expressed regarding the levels of stress these men and women face in carrying out their duties. As this particular vocation is still in its infancy, little research has been conducted in this area. The emphasis has
been in developing training rather than identifying or controlling stress created by the job.

In addition to typical job stresses, the paramedic is faced with continuing stress related to the calls themselves. This "response stress" is generated as a result of a number of factors:

1. Unless the central dispatcher can gain accurate information the paramedic team often executes a run with little knowledge of what they can expect to encounter. Not only is this a problem of preparation for the unknown, but also, the team may be confronted with situations in which they must expose themselves to danger to save or protect the patient.

2. In classic paramedic work, these people are the field representatives of the doctor. Orders for treatment are given by voice command from the doctor to the paramedic in the field by means of two-way communication. However, many paramedic teams must make life and death decisions without direct communication with the hospital. In some instances, this occurs by accident as a result of radio damage or interference. In other instances, lack of direct communication is by design. In these cases, a written protocol replaces voice command.

3. Even if the cause of the run is not dangerous, the run itself can be life threatening. Answering a call at high speed through crowded streets constantly exposes the team to injury.

In a recent study of paramedics working in Houston, researchers found significantly high stress levels among paramedics who admitted to finding their work demanding and exhausting (Mannon, 1981). Reed (1981) in a study done in Dallas, Texas, found that fifty-eight percent of those
paramedics responding to a survey stated they did not want to be in emergency medical work. Much of their reasoning centered around job related stress.

Because of the lack of research in regard to paramedics, there is a need to provide additional descriptive information about the nature of job stress in this profession. There is also a need to gain knowledge about how this stress may influence the individual paramedic. Within this dissertation, a number of variables will be investigated in order to observe relationships that might shed light upon both the type and nature of stressors that come to bear on the paramedic.

The research results presented in this dissertation will hopefully be of assistance in identifying specific stressors in paramedics. This identification process can then be of assistance in reducing job related stress among paramedics.

**Purpose of the Study**

The purpose of this study is two-fold:

1. To provide descriptive information about perceived stress in paramedics.

2. To examine the relationship between selected personality characteristics of the paramedic and his reactivity to perceived stress.

This dissertation examines various social-psychological aspects of the paramedic's work environment such as role conflict and ambiguity; stressors encountered on a call;
job threat and anxiety; job satisfaction; and psychological participation. In addition, the selected personality characteristics of locus of control and levels of anxiety will be examined. In this manner, the study should add to the understanding of stress in paramedics.

RESEARCH QUESTIONS

The following research questions are considered within this research:

1. What are the specific stressors which negatively impact the paramedic on his job?
2. Does a consistent group of stressors exist among subjects under study?
3. Does a relationship exist between individual reaction to stress and selected personality characteristics?

RATIONALE

Stress has been examined from various perspectives. Beehr and Newman (1978) identified these perspectives as:

1. The personality characteristics of the individual tend to determine the manner in which the individual handles stress.
2. Environmental factors external to the individual create stress, thus if these factors can be controlled, the level of stress to which the individual is exposed can also be controlled.
3. The physical characteristics of the individual tend to determine the individual's ability to cope with stress. Thus, if the individual is not physically healthy, he will be less able to cope with stress.
4. The person-environment interactions explains the stress reactivity of the individual based on the interaction of his/her internal environment and the external environment.

A major contributor to the development of stress theory has been Hans Selye. Beginning in 1936, and continuing to present day, Selye has provided a flow of information regarding stress. His approach suggests stress is an important component of life. Selye suggests stress does not have to be unpleasant to put strain on the individual. Instead, he suggests that some stress is good, if not necessary in life. This stress, termed eustress, is important in motivating man towards specific goals in his life (Selye, 1936, 1980). However, Selye also points out certain types of stress may be beyond our power of adaptability and can cause disease due to unrelenting strain on the individual. Selye has termed this type of stress as distress.

Within the confines of this research, attempts will be made to identify those stress factors contributing to distress in paramedics. More specifically, the emphasis will be on those factors within the job that contribute to negative stress in these individuals. For the purpose of this dissertation, job stress will be divided into two categories: **Structural Stress**, stress precipitated by more traditional job stressors; and **Response Stress**, stress created by factors inherent within the course of responding to an emergency.
In our highly industrialized society, the work place has become an arena for the study of stress. As Pelletier (1977) states, "Job stress is one of the most universal and intense kind of stress experience." A major impetus for stress research has come from questions being raised by business and government as they are forced to pay increasingly expensive medical bills for their employees (Beeher, Newman, 1978). Further, business is finding that providing help for dysfunctional employees is more cost-effective than firing them and replacing them with less experienced workers. Decidedly then, one is not surprised that the majority of stress research relates to management personnel in particular, as these people are the most expensive to replace.

The financial consequences of occupational stress are staggering. The expense to American industry alone is somewhere between $20,000,000 and $50,000,000 each year (U.S. Today, 1978). The consequences of this stress comes in the form of high absenteeism, reduced rates of productivity, a decrease in work quality, and a rise in accidents. In the health care field, all of these consequences are crucial in that they ultimately adversely affect good patient care.

A number of factors present themselves within any organization as being contributory to job stress. One of the better known studies on organizational stress was conducted by Kahn and his associates in 1964. This study
found that high levels of role conflict were related to low levels of job satisfaction, low confidence in the organization, and a high degree of job-related tension. Role ambiguity was also examined and as with role conflict, high levels of role ambiguity were related to the outcomes mentioned above (Kahn, et. al, 1964). Tosi and Tosi (1970) found role conflict negatively correlated with teacher job satisfaction. They further note role ambiguity was not related to job satisfaction. When Rizzo, House and Lirtzman (1970) examined role conflict and ambiguity they found both correlated weakly but positively with anxiety and propensity to leave the organization.

Kahn's model (1964) suggests high levels of role conflict and role ambiguity are related to low levels of job satisfaction, low levels of job participation, and high levels of perceived threat and anxiety. Hence, the factors of role ambiguity, role conflict, and their correlates of levels of job satisfaction, job participation and job threat, can be considered indicators of levels of job stress in any organization. Within this research, these constructs will represent the category of \textit{Structural Stress}.

Stress, created by factors inherent within the course of responding to an emergency, represents the second class job stressors experienced by the paramedic. Identification of types of calls and situations which are stressful has
been attempted by Cox (1981). In a theoretical sense, the understanding of response stress is very limited. Researchers have yet to identify stable stress factors experienced by the paramedic during an emergency response. Without reliable identification of these factors, one cannot move toward any effort at stress reduction in this area. A major portion of this research will be what amounts to a replication of Cox's work, with the goal of hopefully finding a stable set of response stressors that can be generalized across departmental lines.

A final issue to be considered in this dissertation is the relationship between stress reactivity and selected personality characteristics. Kobasa (1979) theorized that certain personality types were more susceptible to stress than others when stress levels on these individuals were similar. She suggests those individuals with a high degree of inner control proved less susceptible to stress than those with low levels of inner control. A goal of this research is to provide a list of stressors consistent within the paramedic group under study. Reactivity to these stressors as measured by levels of anxiety will vary according to levels of locus of control displayed by the paramedics.

Questions are being raised regarding the types of stress paramedics are subjected to and the results of this exposure to stress. The staff of Fire Chief Magazine
(1980) recently interviewed administrators from a number of fire departments concerning their paramedic programs. The report suggested that in the short history of paramedic programs, major problems have occurred in the area of turnover and "burnout" of personnel. Research on persons in other vocational areas suggest that these two problems are indicative of high levels of job stress. (Cox, 1981; Kutash, 1980).

In preparing this study, a search of titles in the area of paramedic stress produced only four studies. Only one of these works actually dealt with identifying stress factors. Traditional roles within the medical profession are undergoing rapid changes. These changes are highlighted by the expanding role of the paramedic in diagnosing and treating the critically ill and injured individual. Often, this care is executed under the worst possible conditions. With this increased responsibility and heightened sophistication of knowledge required of the paramedic, job stress is becoming an issue of great concern (Cox, 1980). Paramedics represent a crucial role in the total health care system of this country. As such, they deserve consideration in research pertaining to occupation stress.

LIMITATIONS

The setting for the study was the fire department of Columbus, Ohio. At the time of the data collection, the
department employed 113 paramedics. Of this total eighty-four men chose to participate in the study. The research, therefore was limited to a single department. The results of this study are not construed to be generalizations for other systems which do not have a command organizational structure similar to that of the department used in this study.

The stressors identified for this particular population may not be the same for a paramedic population consisting solely of individuals working for private ambulance services. Individuals in these positions generally provide non-emergency transportation of patients such as hospital transfers. Consequently, the type of stress these individuals experience is of a somewhat different nature than paramedics involved in primary emergency care.

Other limitations involved test administration. Administration of the tests were conducted within each individual fire house, and while this method proved time consuming, it provided more personal contact and generated excellent cooperation among individuals. Also, this method allowed the instrument to be administered without taking the various units out of service, which would have been necessary to execute any mass administration of the instrument. The time necessary to complete the instrument
amounted to an average of forty-five minutes. Since the men were "in-service" during the test administration, work on completing the forms was sometimes interrupted by emergency calls. As a result, seven of the eighty-four instruments returned were incomplete and subsequently eliminated from the data analysis.

Data collection was limited to five instruments. A questionnaire was administered to acquire demographic information, along with single response items pertaining to stress experience on an emergency. The Environmental Stress Scale (ESS) and the Role Questionnaire were administered to measure factors of occupational stress. The State-Trait Anxiety Scale was administered to measure generalized trait and state anxiety. Finally, the Internal/External Locus of Control Scale (I-E Scale) was administered to measure externality of control.

**DEFINITION OF KEY TERMS**

**Emergency Medical Services (EMS)**

An organized system of pre-hospital care administered by qualified personnel under standards organized by federal and state statutes.

**Emergency Medical Technician-Ambulance (EMT-A)**

A trained or qualified technician certified under the Ohio Revised Code who is responsible for the operation of an ambulance and care of patients, and who in an emergency determines the nature and extent of illness or injury and established priority for required emergency care.
Emergency Medical Technician-Ambulance Advanced (EMT-A Ad.)

A trained person who holds an EMT-A certification and who has completed training in patient assessment, shock and fluid therapy.

Emergency Medical Technician-Paramedic (EMT-P)

A person specially trained beyond the EMT-A level in advanced life support or intensive care techniques. These skills include cardiac monitoring, defibrillation, airway or gastric intubation, relief of pneumothorax and the administration of appropriate drugs and intravenous fluids.

Stress

Stress has been defined differently within the literature. For the purposes of this study, stress is defined as the body's psychological, physical and chemical reactions meant to cope with any type of increased demand upon itself. Stress is the product of a dynamic mismatch between the individual and his/her physical or social environment. A dominant theme in discussing stress is that it can be either positive or negative in nature. This position has been presented by Selye (1980). He contends that some stress is good, if not necessary in life. He terms this stress eustress. Selye further identifies damaging stress as distress.

Job Stress

A situation wherein job related factors interact with the worker to change his/her psychological and/or
physiological conditions such that the person is forced to deviate from normal functioning. (Newman, 1979).

Response Stress

Stress created by factors inherent within any emergency situation encountered by emergency medical personnel.

Role

A set of activities or expected behaviors one performs in terms of his relationship to others or to the system as a whole.

Role Conflict

The simultaneous occurrence of two or more sets of pressures such that compliance with one could make more difficult the compliance with the other. (Kahn, 1964).

Role Ambiguity

A pattern of communicated expectations which contains logical incompatibilities or which takes inadequate account of the needs and abilities of the focal person. (Kahn, 1964).

Anxiety State

Refers to anxiety which occurs at a moment in time as measured by the State-Trait Anxiety Inventory.

Anxiety Trait

Refers to relatively stable states of anxiety felt by individuals as measured by the State-Trait Anxiety Inventory.
**External Control**

A reinforcement perceived by an individual as following some action of his own but not being entirely contingent on his action.

**Inner Control**

An event is perceived by the individual as contingent upon his own behavior or his own relatively permanent characteristics.

**SUMMARY**

Chapter One has provided a brief overview of the issue of stress and how it affects the individual within the work environment. A brief explanation regarding stress in paramedics was presented and research questions were presented. Finally, a rationale for the study was presented. Chapter Two will present a review of the literature relating to stress. Chapter Three presents the methodology used to execute the project. Chapter Four presents the findings of the research and Chapter Five offers a discussion and recommendations for future research.
Chapter II

REVIEW OF THE LITERATURE

The major issues addressed in this dissertation focus upon the effects of job related stress on paramedics. The review of literature contained in this chapter will include the following eight sections:

2. Occupational Stress.
3. Personality and Stress.
4. Stress in the Helping Professions.
5. Police Stress.
8. Paramedic Stress.

CONCEPTS OF STRESS

"Stress, like relativity, is a scientific concept which has suffered from the mixed blessing of being too well known and too little understood." (Selye, 1980).

Because the term "stress" means different things to different people, it is necessary to review some of the themes relating to this concept. The term stress is borrowed from engineering science where the term is utilized to explain metal fatigue. Hooke's Law of Elasticity explains how specific loads produce deformation in metals. These loads produce stress on the metal which, in turn, creates strain within the metal itself. Hooke's
Law states metals are elastic to certain limits. That is, once the load is lifted, the metal returns to its non-stressed configuration. When the metal reaches its elastic limits it does not return to its normal configuration but suffers damage. (Cox, 1978).

Selye, in 1936, articulated his concept of stress as the General Adaptation Syndrome (GAS). His concept of stress is basically physiological in nature. He suggests, first, stress does not necessarily have to be unpleasant to put strain on the individual. Rather, Selye maintains that many forms of stress are positive and necessary for our development. However, he does suggest certain types of stress disrupt our homeostasis and thus trigger the GAS. Selye believes stressors can disrupt homeostasis in two ways: By being beyond our power of adaptibility and by causing disease because of a particular weakness in the structure of our organism (Selye, 1980).

Through his medical research, Selye has determined that in many respects the body responds in a stereotypic manner with identical biochemical changes, essentially meant to cope with any increased demand upon the human machinery (Selye, 1974). When the individual is confronted with stress the GAS is triggered by the body to adapt to the increased demand. Selye describes the GAS in the following manner: The first stage of the GAS is the alarm stage. If the body is confronted with an agent so threatening that continuous exposure to it is incompatible
with life, activation of this stage occurs. The body "gears up" to handle the stress and increases occur in activity of the autonomic nervous system.

If the source of stress continues, the second stage of the GAS, termed resistance, is activated. This stage is also characterized by increased activity within the various body systems. The organism's full adaptation to the stressor is engaged in an effort to create improvement or resolution of the stress (Selye, 1980). It should be noted that Selye maintains that it is at this stage there occurs a concurrent decrease in resistance to most other stimuli.

Since Selye views adaptability as finite, the third stage of the GAS exhaustion, occurs if the stressor is sufficiently severe and prolonged. At this stage symptoms reappear and if stress continues unabated, death occurs. (See Figure 1).

While the consequences of the GAS are grim, Selye maintains that some stress is good. This stress termed eustress, is important in motivating man towards specific goals in his life. Again, Selye maintains that any form of stress is bad if it is experienced in an extreme form (Selye, 1974). In a 1980 article Selye conceptualized four basic variations on life stress. These are graphically displayed in Figure 2. As he states, "our goal should be to strike a balance between the equally destructive forces of hypo and hyperstress to find as much eustress as possible and to minimize distress" (Selye, 1980, p. 141).
FIGURE 1: SEYLE'S GAS (COX, 1978, p. 6)

FIGURE 2: Selye's Four Variations of Stress (Kutash, 1980, p. 142)
Levi and Kagen (1971) took Selye's view of stress and constructed a theoretical model to describe psychological factors in the mediation of physical disease. Their main hypothesis is psychological stimuli can and do cause physical disorders. They further suggest that most life changes evoke a physiological stress response which prepares the body for the physical activity of coping. Holmes and Rahe (1967) suggest a similar hypothesis by suggesting that stress is manifested through life changes experienced by all persons. They further suggest that the chances of the onset of illness within all individuals is correlated with the number of life change experiences encountered.

While Selye's approach deals with stress in terms of the person's response to disturbing or noxious environments another school of thought approaches stress in terms of the situation itself. The major question is "what is a stressful situation?" As with metals, there appears to be great individual differences in a person's resistance to stress and levels which may be tolerable to one may be completely intolerable to another (Cox, 1978). These individual differences are explained through the intensity of the emotion which is created by the situation. Attention is given to situations which involve extremes of sensory stimulation and workload. According to this theory, stress arises whenever there is a departure from optimum conditions of demand which the person is unable or
not easily able to correct. Welford (1973) suggests that individuals operate at various levels in their everyday life. His model suggests an individual is operating at maximum efficiency and with less stress when his performance is perfectly matched with the situational demands he faces. Performance drops off when the demand either drops, creating a situation of underloading or when the situational demands increase creating a performance overload.

A third school of thought views stress as the result of the person-environment interaction. In this approach, stress may be viewed as a reflection of a lack of fit between the person and the environment (Cox, 1978). Researchers in this area attempt to look at variables in both the person and the environment and how these variables combine to create stress. As Pine (1980) notes, it is not only a question of environment, but also a question of perception in determining the intensity of stress reactions.

From this particular viewpoint, stress is described as part of a complex and dynamic system of interaction between the person and the environment. Cox and McKay suggest a five stage system that identifies stress as an individual perceptual phenomenon rooted in psychological processes. (Cox, 1978). The five stages can be explained as follows:
Stage 1 - Sources of demand relating to the person. These sources are seen as part of his environment. Demand is usually regarded as part of the person's external environment; however, the present model distinguishes between external and internal demands.

Stage 2 - The individual's perception of demands and of his own ability to cope with stress. It may be said to arise from an imbalance between the perceived demand and the person's perception of his capability to meet the demand. What is important for man is his cognitive appraisal of the potentially stressful situation and of his ability to cope.

Stage 3 - Imbalance accompanied by the subjective experience of stress. This is accompanied, in turn, by changes in the physiological state and by cognitive and behavioral attempts to reduce the stressful nature of the demand. This stage represents a response (coping) to stress.

Stage 4 - Consequences of coping responses. These consequences include both actual as well as perceived consequences.

Stage 5 - Feedback. This occurs at all stages. It is effective in shaping outcomes at all stages (Cox, 1978, p. 20).

While this model appears complex, it does explain the interactional process quite well. Most important in the model is the concept of subjective perception on the part of the individual. It is well known that individual responses to stress vary widely. The model suggests that this is due to the subjective perception of the situation. Past experience prepares the individual to cope with changing life situations. These experiences color our responses by creating expectations of outcomes within our cognitions. Werthimer's Gestalt example of the citizen and the soldier viewing a specific terrain is a good example of this process (Watson, 1978). The soldier views the terrain
in a military mindset. He looks for faults and advantages of the terrain with an eye for tactics and ambush. The citizen looks for the beauty of a forest or the agricultural utility of a field as he views a geographic area. Here we have two people viewing the same area, but we see their perception considerably altered by their past experience and training.

Past experience, however, is only part of the development of a perceptual set. In recent years certain researchers have suggested that cognition plays an important role in determining the stress levels an individual perceives. Lazarus (1966) suggests that three classes of factors in the individual's psychological structure influence threat (stress) appraisal:

1. Motivational characteristics of the individual.
2. Belief systems concerning transactions with the environment.
3. Intellectual resources including education and sophistication (p. 120).

Lazarus' model is a cognitive/phenomenological model based on the individual's perception of his competence to deal with a given situation. This appraisal process is ongoing in nature and is utilized by the individual to adapt to constantly changing environmental situations. Stress increases as the situation becomes increasingly mismatched with the person's perception of his ability to cope. Stress is held to a minimum as long as the situation is within the competency of the individual.
OCCUPATIONAL STRESS

"Workers in different disciplines formulate different conceptions of what is stressful. Heavy labor and long hours of work are phenomena of quite a different order from the heart breaking loss of a loved one, anxiety over financial problems or the chronic irritation caused by an insufferable wife or employer." (Murrell, 1978, p. 73).

Stress on the job has been an area of extensive study since World War II. It can easily be seen that stress precipitated by job facets has an important impact on our lives. Work provides the means for economic success or failure within our culture. Thus, it can be viewed as critical to feelings of personal satisfaction and worth within the individual. There have been many studies that suggest coronary disease, drug and alcohol abuse and psychological dysfunctions are related to job stress (Applebaum, 1980; Russek & Zohman, 1958; Hames, 1975; Kutash, 1980). In the past ten years corporations have begun to attend to these problems by providing various programs to reduce job stress. Most notable have been the development of "in house" counseling programs to cope with absenteeism and alcohol abuse. There is a definite lack of evaluative research in this domain. Very few of the purported strategies for handling job stress have been evaluated with any sort of scientific rigor. (Neuman, Beehr, 1979).

Job stress can be defined as a situation wherein job related factors interact with the worker to change his/her psychological and/or physiological conditions such that the
person is forced to deviate from normal functioning. (Neuman, Beehr, 1979). A number of authors have identified factors of job stress. Neuman and Beehr (1978) suggest that causes of job stress can be found within both the person and his work environment. These authors suggest the following facet model to explain job stress. This general model indicates as simply as possible the general focal points of the job stress/employee health domain. (See Figure 3). These facets can be explained as follows:

**Environmental Facet** consists of elements within the employee's environment which are considered to be stress producing.

**Personal Facet** consists of characteristics which may lend themselves to stress within the individual.

**Process Facet** refers to the physiological and psychological process that may link the environment and personal facets to each other and to the human consequences and adaptive response facets.

**Human Consequence Facet** consists of all aspects of physical and mental health.

**Organizational Consequences Facet** involves the effect that occupational stress may have on organizational effectiveness.

**Adaptive Response Facet** includes elements which take into account the various approaches for dealing with stress.

**Time Facet** Present in the previous six areas. Beehr and Neuman state:
FIGURE 3: Beehr & Neuman's Model of Occupational Stress
"Time is obviously an important dimension in stress-health phenomena. It follows then, that the elements of any facet could serve as independent, intervening or conditioning (moderator) variables depending on which time period or segment of events is sampled and studied." (Beehr, Neuman, 1978, p. 676).

McGrath (1976) presents an interactional model which contains three embedding systems for organizations. These systems are identified as:

1. The physical and technological environment in which behavior takes place.
2. The social-interpersonal environment within which the behavior occurs.
3. The person system, which accounts for differences possessed by everyone.

McGrath's model is graphically depicted in Figure 4.

McGrath defines his model as the "3-2 system intersects". The author identifies six classes of stress within the model. These are:

1. Stress arising from the physical environment.
2. Stress arising from social environment, in the sense of interpersonal relations.
3. Stress within the person which is brought to the situation by the person himself.
4. AB - Stress intrinsic to the behavior setting.
5. AC - Task-based stress.

Finally, Cooper and Marshall present a model which deals with sources of managerial stress. They suggest seven categories or sources of occupational stress. Their model is displayed in Figure 5.
FIGURE 4: THREE BEHAVIORAL SYSTEMS IN ORGANIZATIONS
FIGURE 5: Sources of Managerial Stress
From a list of more than forty factors which were identified as possible sources of occupational stress the authors identified seven categories as most important. These are briefly outlined below:

**Factors Intrinsic to the Job** - Stress points in this category include facets intrinsic to the nature of work itself. These facets include such things as too much or too little work, deadlines, having too many decisions to make, long hours and the cost of making mistakes. These factors suggest that working conditions can and do have an effect on worker physical and mental health. This has been proven through previous research. Cooper and Marshall point to the work of Kornhauser (1965) who suggested a direct correlation between poor mental health and unpleasant working conditions. Such conditions included working faster than usual, and working excessive hours.

**Role in the Organization** - This category is associated with the person's role in the work place. Much of the research in this area has been in regards to role ambiguity and role conflict. Both of these concepts will be discussed in depth in another section of this presentation. Other negative factors which may be associated with stress in relation to role in the organization include lack of participation in decision making; lack of managerial support; and coping with rapid technological change.

**Relations in the Organization** - This category examines relationships with others in the work setting. French and
Caplan (1973) view poor work relationships as those which include low trust, low supportiveness and low interest in listening to and trying to deal with problems that confront the worker.

**Career Development** - Cooper and Marshall (1978) identify two clusters of potential stressor relating to this category. They include:

1. Lack of job security, fear of redundancy, obsolescence or early retirement.
2. Status incongruity, under or over promotion and frustration at having reached one's career ceiling.

**Organizational Structure and Climate** - The problems identified in this category are those dealing with little or no participation in the decision making process, lack of a sense of belonging, poor communication and lack of effective consultation.

**Organizational Interface with the Outside** - This area can be recognized as extra-organizational sources of stress. This category takes into account the combination of the employee's life outside and inside the organization. The types of outside stressors are similar to the kinds identified by Holmes and Rahe in their work previously mentioned. These include family crisis, financial difficulties, life crisis and lack of congruence between beliefs of the individual and the philosophy of the organization.
Characteristics of the Individual - This final category takes into account the variables within the individual which affects his reaction to stress. Research in this area has already been discussed in an earlier section of this work.

All of these models provide general categories of job stress. Other authors have dealt with specific facets of job stress. Two excellent literature reviews by Beehr and Neuman (1978, 1979) provide comprehensive information concerning research into those facets. In the interest of time and space, data from these reviews will not be reiterated here. However, two important factors will be discussed in the following pages. These are the concepts of role ambiguity and role conflict.

Since the 1964 work of Kahn and his associates, there has been an increased interest in using role theory to describe and explain the stress associated with organizations. VanSell (1980) defines "role" as a set of expectations applied to the incumbent of a particular position by the incumbent and by the role senders within and beyond an organization's boundaries.

Kahn, et. al. (1964) identifies two general forms of role based stress: role conflict and role ambiguity. Role conflict is a situation which forces the individual to choose between a number of behaviors. It can occur in several different forms:
1. **Intra-sender role conflict** - incompatible expectations from a single role sender.

2. **Inter-sender role conflict** - expectations from one role sender which are incompatible with those from another role sender.

3. **Person-role conflict** - incompatibility between the expectations held by the role incumbent and the expectations otherwise associated with his/her position.

4. **Inter-role conflict** - role pressures stemming from one position incompatible with the role pressures arising from a different position.

5. **Role overload** - expecting the role incumbent to engage in several role behaviors, all of which may be mutually compatible in the abstract, within too short a period of time. (VanSell, 1981, p. 44).

Role ambiguity is a direct function of the discrepancy between information available to the person and that which is required for adequate performance of his role (Kahn, et. al., 1964). McGrath (1976) suggests role ambiguity arises for three reasons: The size and complexity of modern organizations; the high rate of change within an organization; and the restrictions on the flow of information within an organization.

Kahn, et. al. (1964) developed a role episode model to explain role conflict and ambiguity. The model explains the interpersonal process between the person being sent expectations (focal person) and those sending the expectations (role sender). The model incorporates organization, personal, and interpersonal factors which affect the role episode. Figure 6 provides a graphic representation of this model.
The organizational factors include structure, level in the organization, task characteristics and organization practices. The personal factors refer to such variables as an individual's age, sex and tenure in the organization. The interpersonal factors in the relationship between role senders and focal person include frequency of their interaction, mode of communication, visibility, feedback, and participation between the senders and the focal person.
(VanSell, 1981). All three sets of factors may affect the role episode by influencing the role senders, focal person, or the relationship between these people.

VanSell (1981) notes role sender/focal person relationships have been investigated by gathering perceptual data on role conflict and ambiguity from the focal person and relating these data to the person's affective and objective responses. Affective responses include job involvement, tension, threat, anxiety, participation, satisfaction and propensity to leave the organization. Objective responses include performance, turnover, and absenteeism. The most commonly used instrument for rating role conflict and ambiguity is the Role Questionnaire developed by Rizzo, House, and Lirtzman (1970).

The best documented outcomes of role conflict are job dissatisfaction and job related tension. (VanSell, 1981). Tosi and Tosi (1970) found that role conflict was negatively correlated with teacher job satisfaction. They suggest that:

"Conflict or the existence of incompatible demands on the teacher, seems to have negative consequences on job satisfaction or alternatively, dissatisfied teachers may view their environment as conflict laden." (Tosi and Tosi, 1970, p. 1072).

Hamner and Tosi (1974) reported among a sample of managers consistent results with other correlation models that showed partial support for Kahn's model. Role
conflict displayed predicted relationships to participation, perceived threat, and anxiety. The authors note that job satisfaction was not correlated with either role conflict or the propensity to leave the organization. They suggest this finding was due to the fact that the managers perceived role conflict as a "given" in an executive job and because this conflict was expected, it did not produce dissatisfaction and a desire to leave the organization.

Peters (1977) examined the properties of role conflict and role ambiguity scales as developed by Rizzo, et. al. Consistent support was reported for each scale across six samples. Role perceptions and performance were unrelated or negatively related in the samples. The author notes this finding is consistent with Tosi and Tosi (1970), Tosi (1971) and Rizzo, et. al., (1970). Most important is the conclusion that the results suggest role conflict and ambiguity are valid constructs in organizational research and are usually associated with negatively valued states such as tension, low satisfaction, and low job involvement.

Miles (1975) examined the causal bases in relationships between role perceptions of conflict and ambiguity and various personal outcomes. He concluded that job satisfaction, job-related tension, and attitudes towards role senders appeared to be related to experienced role conflict. In addition, Miles concluded personal outcomes appear to be causally related to experienced role
ambiguity. He suggests the experience of role ambiguity causes lower levels of job satisfaction and unfavorable attitudes towards role senders.

Finally, a number of correlational studies indicate differences in the impact of role ambiguity across occupations (VanSell, 1981). Schuler (1975, 1979) suggests role ambiguity is more predominant than role conflict at managerial levels, while role conflict was more predominant than role ambiguity among rank and file personnel. Abdelhal (1978) reports the role stressors of role ambiguity and overload are more aversive for individuals on low-enriched jobs than those on high enriched jobs.

While some degree of inconsistency exists among the studies on role ambiguity and role conflict, it is still apparent these factors emerge as crucial indicators of work stress. It is possible that other factors need to be considered in determining the overall impact of work stress on the individual. One factor mentioned a number of times is that of personal characteristics and how they may moderate the individual's response to stress. The next section of this literature will examine this factor.

**PERSONALITY AND STRESS**

While sources of stress have been documented and the ramifications of stress studied, some explanation for personal vulnerability to stress is also necessary. It
seems logical to assume variables within the person tend to intervene in the stress process thus either reducing or exacerbating the resulting effects of stress. Moos (1976) suggests adaptability and coping competence may be related to the variability of environmental conditions in which an individual has learned to function. He also suggests prior information about the problems and reactions individuals will experience is believed to enhance their coping and adaptation processes and to beneficially affect the ultimate outcome.

I would submit that a key to stress reactivity is the general healthfulness of the individual's personality. If the individual is dysfunctional to begin with, it stands to reason he will experience a stronger reaction to a stressor than if he were healthy. Secondly, if the stressor is familiar to the individual and he feels competent to deal with the stressor, then its effects will be less destructive than if the opposite were true. (Yates, 1979).

The concept of control of one's situation presents itself as a possible mediator of stress. Rotter (1966) conceptualizes locus of control on a continuum from most internal to most external in belief. The internal mind set is characterized by a belief in personal outcomes being shaped by one's actions. The external mind set is characterized by the belief that outcomes are controlled by luck or powerful others. Rotter (1975) reports there are well over 600 published studies on the concept of
internal/external locus of control. A number of these studies deal with locus of control as a moderator of job stress.

Organ and Green (1975) found locus of control correlated significantly with role ambiguity, work satisfaction and general job satisfaction. A partial correlation between locus of control and work satisfaction (controlling for role ambiguity) was also significant. However, role ambiguity and work satisfaction were not correlated when controlling for locus of control. These researchers suggest locus of control provides a great independent contribution to differences in work satisfaction than does role ambiguity.

Broedling's (1975) findings in a study of navy personnel suggest internals as employees are more motivated to work than externals, actually perform better and see working hard as being more instrumental in obtaining what they want. Broedling concluded people's perceptions of their environmental influence do have an effect on their behavior.

Harrell (1979) looked at individual cardiac activity to a signaled stress event. He hypothesized differences in cardiac activity were related to individual differences in locus of control and autonomic balance. He found one determinant of the coping strategy used in dealing with the stress event was the individual's generalized expectancy for locus of control.
Lester and Genz (1978) examined belief in locus of control and job satisfaction in police. It was felt that the quasi-military nature of the police force might lead to a growth in the belief of external control. The researchers found age and experience had an effect on locus of control. The older, more experienced officers were more likely to believe in internal control than recruits. Also, job satisfaction was related to belief in internal control.

Kobasa (1979) considered how highly stressed subjects who remain healthy differ from those who show illness along with high stress. She suggests the difference between these two types of subjects is based on the personality difference characterized as "hardiness". Hardy persons are considered to possess three general characteristics:

1. The belief that they can control or influence the events of their experience.
2. The ability to feel deeply involved in or committed to the activities of their lives.
3. The anticipation of change as an exciting challenge to further development.

In this study of executives, Kobasa suggests the internally controlled individual is more adaptable and thus more positive about changes in his life. Thus, stress is viewed as a controllable challenge rather than an overwhelming obstacle.

Averill (1973) suggests that some organisms are not debilitated by stressful stimuli. He suggests the healthy person, identified as an individual who displays decisional
control, cognitive control and coping skills, can cope with highly stressful situations. Coelho, Hamburg and Adams, (1974) suggest persons who feel committed to a belief system will remain healthier than those who are alienated. People with an ability to recognize distinctive values and priorities tend to display an internal balance. This balance appears necessary for the accurate assessment of threat posed by a particular life situation and for the competent handling of it. Further, persons who feel positively about change are catalysts in their environment and are well practiced at responding to the unexpected. Their basic motivation for endurance allows them to persist even when new information is exceedingly incongruous and thereby maximally provoking of strain and illness. (Moss, 1973).

To a large extent it appears stressfulness of an event is controlled by the individual's perception of his capability in the face of stress. Predictable aversive events are less stressful than unpredictable aversive events. Further, stressors that are controllable usually are experienced as less aversive than stressors that are not controllable (Kutash, 1980). Thus an individual who perceives himself as competent in a familiar situation will experience less stress than if the opposite were true. One solution to reduction of stress worth noting here is one made by Fineman (1979). He suggests a cognitive approach to the problem wherein a person who is stressed is
encouraged to examine his perception of environmental demands to determine if his perception is unduly distorted. In line with this concept of cognitive distortion has been the development of the type A/type B personality. The designation of these two personality types is the result of work done by Friedman, Roseman et. al. (1959, 1974). They have classified individuals in terms of two contrasting types of behavior patterns. Type A behavior is emitted by a person who is in a chronic struggle with his/her environment. The struggle is focused on accomplishing more recognition, money and possessions in less and less time. (Parrino, 1979). This type of an individual tends to be hard driving, persistent and involved in his/her work. He/she also possesses an enhanced sense of time urgency, especially in relation to vocational deadlines. Type B individuals tend to have a relative absence of those characteristics. (Keenan, 1979). The following table displays specific differences between the two personality types:
TYPE A INDIVIDUAL  
Chronic struggle with the environment  
Hard-driving - Overachiever  
Time urgency - hyperresponsive  
Hostility  
Workaholic  

TYPE B INDIVIDUAL  
Balanced interplay with environment  
Rational approach to achievement  
Relaxed  
Positive interpersonal  
Balance between work and other life events  

*Most individuals fall at various points between these two extremes.

TABLE 1: TYPE A AND B BEHAVIOR PATTERNS  
(Parrino, 1979, P. 26)

The perceived chronic struggle with the environment tends to be distorted in nature. Thus the type A individual finds himself in a constant state of alert which tends to increase the wear and tear on his/her psychological and physiological systems. Unquestionably, this state of affairs exacts its toll on the individual. Considerable evidence exists to support the fact that type A behavior is highly associated with coronary disease. Efforts to alter this behavior and thus reduce emotional stress which can damage the heart currently centers around identification of type A traits and treatment by alteration of cognitions or behavior modification techniques. (Jenni, 1979).
STRESS IN THE HELPING PROFESSIONS

Some effort has been made to examine stress in the helping professions. Stress in this area tends to be exacerbated by the added strain of dealing with people with problems on a daily basis. In general, members of the human services profession are required to serve too many people with too few resources at their disposal. (Greenberg & Valletutti, 1980). In a 1978 study completed at Brown University a high incidence of stress related illness among people whose job requires that they bear significant responsibility for the well-being of others was shown. (Greenberg & Valletutti, 1980).

Greenberg and Valletutti identify a number of specific stressors for the human service professional. These are:

1. Lack of support services.
2. Excessive or irregular work hours.
3. Lack of cooperation by the client, patient or student.
4. Lack of participation in agency planning or excessive time in administrative meetings.
5. Lack of decision-making authority.
6. Constant exposure to human grief.
7. Role ambiguity centering around rights of practitioner to intervene, responsibility of client for costs, when referrals should occur, and how close the client-practitioner relationship should be.
8. Role conflict centering around four areas:
   A. The agency.
   B. Clients.
C. Friends and family.
D. Peers.

9. Role overload involving excessive, unusual hours, too many tasks in too short a time and making major decisions on a moment's notice without prior planning. (Greenberg & Valletutti, 1980, p. 5).

POLICE STRESS

Within the human service professions the effect of stress on police personnel has gained some attention in the research. In police work unlike many other professions, the officer is autonomous to an untoward degree. An officer in the street has no one to rely on but himself and more often than not, events occur at a pace which precludes any possibility of checking with any other authority. (Haynes, 1979).

Haynes suggests four areas of stress in policemen. These are: uncertainty, underloading and overloading, self-control and frustration. Stratton suggests other stress factors also come to bear on policemen. These include:

1. The increased number of situations which the officer's body is called upon to be in an alert state.

2. Situations in which the officer is responsible for human life.

3. Shift changes and their affect on biological conditions.

The effects of stress on policemen has been explored in a number of studies. Kroes, Margolis and Hurrell, (1974) found one hundred police officers interviewed in their study stated that the job adversely affect their family life. Digestive disorders were reported by thirty two percent of the group and twenty four percent reported headaches and backaches occurring on a regular basis.

Richard and Fells (1980), studied medical records and revealed the suicide rate for police was very high. Further, their findings suggests an extremely high number of premature deaths existed within the officer population. Finally, admission to hospitals was significant in areas of circulatory and digestive problems.

Grencik (1973), suggests overt strain occurs early in an officer's career. Medical findings in the study showed fifteen percent of the officers had levels of cholesterol which rendered them twice as prone to coronary heart disease. Some fifty-six percent of the officers were from six to twenty pounds overweight. Finally, twenty-four percent of the officers were categorized as being in the medically high risk category for heart disease.

In addition to these problems, other authors have identified common emotional problems resulting from police stress. Stratton (1981) outlines these as follows:

1. The workaholic - Most officers believe very strongly in what they are doing. Experiencing the tragedies that befall
fellow human beings leads him to believe that if he works as hard as possible he will be able to eliminate at least a portion of this suffering.

2. Exhaustion syndrome - After years of working hard and for a variety of reasons such as little recognition and little advancement, it is possible for the individual to become cynical and disgusted. Stratton reports that this syndrome causes some officers to go into semi-retirement in their mid-thirties. After experiencing so many difficulties the officer's only motivation is sticking it out until time for retirement.

3. Alcoholism - Stratton suggests that the most socially accepted way of relating to people is in the presence of alcohol. He further suggests that many police see alcohol as a substitute for other forms of relieving pressure.

4. Emotional reactions to traumatic experiences - Police encounter a wide spectrum of situations and there are numerous traumatic experiences which can cause a wide range of emotional reactions. This strain eventually takes its toll on the officer.

5. Marital relations - there are many concerns within this area. Issues such as the quality of interaction with the spouse, feelings of unimportance or rejection by the non-law enforcement spouse and the fact that interests of the family appear to the family as low in priority all contribute to stress in this area. (Stratton, 1981, p. 81).

Hageman (1978), examined marital relationships in policeman as they relate to occupational stress. He suggests that due to the nature of their jobs, policeman tend to experience detrimental effects upon their marriage. He also found officers in his sample experienced problems with role conflict. The highest item endorsed was "being an officer twenty four hours a day". He made two
conclusions: Expectations of wives and family as well as superiors are most significantly different than expectations held by peers, and what an officer "actually does" is more closely related to expectations of fellow officers that to any other audience.

Fell, Richard and Wallace (1980) suggest that police appear to be more prone to developing serious medical disorders than the large majority of other occupations. Their study found a relatively high rate of police officers developed serious disorders that appear to be stress-related. The mental health data showed admissions by police were not significantly higher than other occupations. However, the researchers suggest this may be due to fears of being stigmatized or of losing his/her job rather than the possibility that a lack of serious problems exist for this occupation.

NURSING STRESS

Another person-centered profession that should be considered in this review is the profession of nursing. Of particular interest are those areas of nursing which involve high levels of stress such as Intensive Care Units and Surgical Intensive Care units. In a study done by Bailey (1980) a sample of 1238 nurses from ICU units in the San Francisco area revealed the following stress components. They are listed here in descending order of importance:
1. Management of the unit.
2. Interpersonal conflicts.
3. Patient Care.
4. Inadequate skills and knowledge.
5. Physical environment.
6. Life events.
7. Lack of administrative rewards.

Vreeland (1969) in a study of ICU nurses found that nurses most frequently identified as stressful the effect upon them created by the patients' altered physiology or psychological impact of his illness. The study further identified stress precipitated by the surgeon and/or anesthesist who accompany the patient from the operating room. These individuals often cause stress by being impatient, making sharp demands and acting in a distrustful manner towards unfamiliar nurses.

Maloney (1980) conducted a study to provide information on stress in two groups of nurses - Intensive care and non-intensive care nurses. This researcher found that non-ICU nurses displayed high state and trait anxiety when compared to ICU nurses. Further, non-ICU nurses reported higher incidences of somatic complaints. This led the researcher to the conclusion that current literature may be overly dramatic in their description of stressfulness of ICU nursing.

Barut (1978) suggests potential sources of stress can be unit specific in their origins. She further suggests a
large amount of individual variability existed within her sample. Jacobson (1977) found that compared to other nursing stresses, heavy emphasis on intrapersonal conflicts emerged in her study as opposed to non-person centered and environmentally controlled stress.

Welch (1975) conducted a study to identify and compare satisfying and stressful experiences in nursing. She found in all satisfying experiences the dominant source of satisfaction was evidence that the respondent's effort had contributed to improvement in the patient's physical or psychosocial status or to his long-range recovery. The principal source of stress was the patient's condition itself. However, physician unavailability, challenge of nursing judgement or failure to communicate proved to be nearly equal in frequency to this factor.

Huckabay and Jagla (1979) studied stress in ICU nurses. They suggest specific stressors could be identified in four areas:

1. Patient Care - The specific factors perceived highly stressful were the death of a patient, the workload and the amount of physical work.

2. Interpersonal Communication - Communication problems between the staff and nursing office and the staff and physicians were rated very high. Communication problems between the staff members and other departments were rated low.

3. Environment - All the components within this category were rated as intermediate in intensity.
4. Knowledge Base - The number of rapid decisions and the amount of knowledge needed to work in ICU rated as stressors of low to moderate intensity. From these findings it can be reasoned that once the nurse has the knowledge and skill, the degree of stress is reduced.

**HISTORY OF PARAMEDIC PROGRAMS**

In order to understand better the types of stress which confront the paramedic it is important to gain some knowledge of the history of this vocation. The following is a brief description of how professional pre-hospital care has developed in this country.

Development of professional pre-hospital care was not a typically American idea. In fact, the United States was one of the last industrialized nations to develop programs which brought advanced life support to the field. Programs in other countries pre-date the development of our paramedical program and are models of sophistication. (Cox, 1980). This fact is hard to understand since a systems approach to field-casualty care has been improved progressively during each successive military conflict since the Civil War. (Boyd, 1982). The problem has been that it was difficult to translate the concept of emergency care from the battlefield to a citizen system. Boyd suggests the following reasons for this:

"The systems concept was slow to develop within the civilian community for a host of reasons including our postwar (WWII) emphasis on specialization of medical practice, independent hospital planning policies and profound ignorance about emergency medical problems. This persisted
even though improvement in military field evacuation and care was experienced by the majority of physicians and surgeons of that period due to the universal draft/enlistment during World War II and subsequent conflicts... even quite late in the 1970's it was said that life expectancy was better after injury in the fields of Vietnam than on the streets and highways at home." (Boyd, 1982, p. 20).

Prior to 1960, the United States did not have a national policy concerning emergency medical care. During the presidential campaign of that year John Kennedy declared that "traffic accidents constitute one of the greatest of the national health problems". (Boyd, 1982). In 1966, the United States Congress passed the National Highway Safety Act. This particular act represented the first national effort to standardize emergency medical care in this country. Standard 11 of the act required "each state to ensure that any person involved in highway accidents receive prompt and adequate medical care". (Salenger, Slotkin, 1976).

Within the United States the most prominent system to be used as a model for paramedical care is the system developed by Dr. Pantridge in Belfast, Ireland in 1967. The U.S. modified this program by instituting Mobile Coronary Care Units. This capability was later expanded to more general Mobile Intensive Care Units. Most of the original units were designed to be emergency rooms on wheels staffed by physicians and other emergency staff. These units carried the life support services to the scene of injury or accident. From these developments evolved the
concept of using highly trained paramedical personnel to provide early assessment and advance life support.

While the country did not have a national plan before 1966, the concept of a rescue squad was not a new one. At the time of the 1966 legislation there were about 25,000 ambulances in service. Twenty thousand of these were of the station wagon type which were unsuitable for tending sick or injured people in transit. In many smaller towns the hearse and the funeral director also doubled as ambulance and attendant. (Kennedy, 1982). Some local efforts were made to maintain an adequate standard of care. However, even the development of state wide standards of care were slow in coming. Columbus, Ohio for example, traces the origins of its rescue squad system back to the year 1934. Yet it was not until 1958 that the state of Ohio developed an organized program for the training of emergency squad personnel in victim care and rescue procedures. Up until that time squads in Ohio were trained under a number of programs including the Bureau of Mines First Aid Course and the Red Cross Standard First Aid Course. The problem at the time was that none of the existing programs provided a complete training program. (Gahloni, 1979). The materials available were fragmentary each omitting vital phases of emergency care and rescue work. An example of this is the fact that none of the programs at that time provided any training in auto extrication. Squads either developed their own training
programs for this problem or simply ignored extrication in their training efforts. This initial effort at standardizing training was one of the first of its kind in the United States.

In 1959, the Ohio Trade and Industrial Education Service published an Emergency Rescue Squad Manual as part of its training program. This text coupled with a forty hour course of instruction provided comprehensive training to deal with the full range of emergency and rescue situations that would confront the squadman of that period. In 1964, the text was updated and an instructor's manual was developed to assist the instructor in the field as well as to insure uniformity in the teaching of this program. (Gahloni, 1979). As a result of this pioneer effort, Ohio was in an excellent position to meet the Federal guidelines stemming from the 1966 Act noted above.

Currently, there are four training programs provided to the emergency service through the state of Ohio. The first two programs are administered by the Trade and Industrial Education Service of the state through their EMT-A Training office. These two programs are a "First Responders" course consisting of forty hours. This program is designed to give basic first aid skills to those individuals who may arrive first on the scene of any emergency. Such personnel would include policemen and firefighters. The second program is the Emergency Medical Technician-Ambulance program. This program meets
Department Of Transportation guidelines and consists of ninety hours of training. Individuals successfully completing this program are licensed by the state for three year periods. An EMT-A's license must be renewed every three years. In order to be relicensed, the EMT-A must complete a twenty-seven hour refresher course and pass a three hour exam. State and Federal Law require that all personnel involved in public or private emergency service must have successfully completed this training. (Gahloni, 1979). The EMT-A program is particularly important because it represents the foundation for the paramedic programs in Ohio.

The remaining two programs are administered by the Ohio Board of Regents. These programs represent two levels of advanced life support beyond the EMT-A level. An individual must maintain his/her EMT-A status to qualify for these programs. The first program is the EMT-A Advanced program. This program trains the EMT-A in the administration of intravenous fluids for the treatment of shock. This training involves twenty-five hours of didactic and practical work beyond the EMT-A training hours. Certification must be renewed every three years. The EMT-A Advanced must have at least eighteen hours of continuing education during this three year period to be eligible for recertification. (Ohio Board of Regents, 1981).
The second program is the Emergency Medical Technician-Paramedic program. This program also conforms to Department of Transportation guidelines and consists of 500 hours of training. Recertification occurs every three years. Requirements for recertification include seventy-two hours of continuing education in specific areas of treatment. (Ohio Board of Regents, 1981). A typical paramedic course curriculum can be found in Appendix A. Finally teaching locations vary according to localities. All instructors are certified by the state and all teaching sites must also be approved.

During the past decade the Columbus Fire Department Emergency Medical Service (EMS) has evolved into one of the more sophisticated systems in the United States. The system is two-tiered with Squads which generally handle non-threatening emergencies and four Medics which generally handle advanced emergency care. This system is the current state of a program which evolved from the Heartmobile program founded in 1969. This unit was a mobilized coronary care unit and was one of the first of its kind in the United States. The program started out with a cadre of twenty-two squadmen who had an average of 2,000 hours of direct physician supervision on the original Heartmobile from 1969 to 1971. (Lewis, 1979). By 1971, experience had indicated that physician attendance on the Heartmobile was no longer necessary. A unique feature of the Columbus system was a decision made in 1971 that permits paramedics
to perform autonomously, directed only by written protocol. This decision allowed the system to abandon mandatory telemetry with the area hospitals. The protocol is updated on a regular basis and is also expanded to cover new developments in the field. (Lewis, 1979). Another rather unique feature of the Columbus system has been the development of an automatic response system encompassing the Greater Metropolitan Columbus Area. Through this program units adjacent to but outside the corporate limits of Columbus respond when needed to areas within the Columbus city limits. In return, these suburbs receive the same type of aid from the Columbus system. The resulting effort has reduced response time of all units and has served to accelerate development of the Medic/Squad programs within the Franklin County area. It should be noted that the Columbus system is representative of an EMS under the control of the fire service. While the federal act did much to set standards for training it did not set any standards for organization of an EMS system. Thus EMS systems vary throughout the country. Basically there exists four types of systems:

1. The EMS system is incorporated with the fire department as in Columbus. The EMS personnel are volunteers picked from the ranks of firefighters.

2. The EMS system is separate from the Fire Service with its own administrative structure.

3. The EMS system is run as a private service.
4. Provision of EMS services is the result of a combination of the above three situations.

PARAMEDIC STRESS

Finally, some consideration will be given to the literature regarding stress factors in paramedics. Very little has been done in this area to date. As a result, little is known about situational or personality variables that contribute to paramedic burnout and stress. (Scott, 1980). It has been suggested by a number of researchers that stress and the resulting burnout does exist and is a problem.

Graham (1981) notes EMS personnel themselves often become aware they are becoming exhausted, irritable and depressed long before these symptoms are noticed or attended to by their supervisors. She suggests administration is not likely to notice the problem until job performance is impaired. According to Graham, reasons for this non-recognition of the problem are:

1. Providers are concerned that employee disability claims might escalate if stress becomes a compensable disability.

2. For many adventurous and action-oriented people the threat of falling victim to paramedic stress conjures up fears of weakness or mental instability.

Scott (1980) attempted to examine the burnout syndrome in ambulance paramedics. In a study of fifty-three paramedics in California he found burned-out paramedics felt more depersonalized and emotionally exhausted than
non-burned out paramedics. Further, burnout was identified as a major factor in exiting the profession. Finally, burned out paramedics displayed higher mean scores on trait and state anxiety than non-burned out paramedics as measured on the State-Trait Anxiety Inventory.

Reed (1981) conducted a study of paramedics in the Dallas Fire Department. The average age of these men was thirty years old and they had been in the department for an average of seven years. The study also showed these men spent an average of four years in the emergency medical service. Fifty-eight percent of the EMT-P's responding to the survey did not want to be in EMS work. Some reasons for this were: having to deal with non-emergency cases, feeling separated from the rest of the department and having too much responsibility.

Cox (1980) conducted a study within the Salt Lake City Fire Department. His study attempts to identify the occupational stressors which characterize the work of EMS personnel and to investigate strain consequences of such work. A profile of these men revealed them to be in their early thirties and members of the fire department for seven years. The sample included sixty-two paramedics and 145 EMT-A's. Both groups were similar in the amount of stress they perceived in various job situations. For both groups pediatric trauma ranked as a high stressor. Paramedics experienced stress more often and were bothered more by
nonline of duty stressors than EMT's. Role confusion, conflict with administration and increased responsibility for human life characterized paramedic perceptions and complaints. Paramedics identified a roughly equal number as exogenous (administrative) and endogenous (line of duty) stressors, while EMT's focused more of their complaints on endogenous factors. Cox suggests that for paramedics the combination of both types of stressors were particularly important. Paramedics also evidenced more psychological distress, fatigue and a higher incidence of negative feelings at work than did EMT's.

**SUMMARY**

Within this chapter I have attempted to develop a basis for understanding stress and particularly stress in the helping professions. As can be seen by the foregoing information, the study of stress is very diversified and often the data is contradictory in nature. Little has been done to consider the effect of individual difference as it relates to stress reactivity. It is also obvious that the study of stress in paramedics has been given little attention in the research. However, evidence suggests that occupations which involve high responsibility for human life and welfare may be especially stress provoking in nature.

Much needs to be learned about the various types of stressors which interact with the worker. The framework
outlined in this chapter provides a guide to examine the various components of stress that interact to harm the individual in a variety of psychological and physiological ways. There is a responsibility within the social sciences to work toward amelioration of such harmful factors. However, an initial effort must be made to identify and understand stress factors which are peculiar to various professions. It is hoped that the following research will add to this effort.
CHAPTER III

METHODOLOGY

This chapter will discuss the details of the methods utilized in executing this study. Attention will be given to sample selection, instrumentation used to gather the data, the actual collection of data and an explanation of statistical procedures used in analyzing the data.

SAMPLE SELECTION

The population chosen for this study were the paramedics employed by the Columbus, Ohio Fire Department. In 1981 there were 113 certified paramedics in the department. These individuals served on medic units, squads and rescue units throughout the city. Work hours for these men (there are currently no women on these units) consists of twenty-four hours on duty and forty-eight hours off duty. The men are broken up into three duty units and each unit is supervised by two lieutenants. The Emergency Medical Services Division is headed by a Battalion Chief. Each duty unit consists of eight squads, four medic units and four rescue units.
The current system is two tiered in nature with the rescue units serving as a separate entity whose major tasks involve specialized extrication efforts. Not all personnel of the rescue units were paramedics at the time of the study. Also, not all squad personnel were paramedics, but were certified EMT-A's. Currently all medic and squad personnel are either in training for or are certified paramedics. Generally speaking, assignments for emergency/fire calls are as follows:

1. Non-life threatening emergencies - Squads.
2. Life threatening or possible life threat - Medic Units.
3. Auto accidents - Squad and/or a Medic unit as well as a Rescue unit if needed.
4. Fire Calls - Squad and/or Medic, Rescue unit plus Fire units assigned to the call through preplanning.

In theory, each unit has an assigned geographical area in which to respond. However, in practice these units provide city-wide protection based on availability. Further, under the automatic response program mentioned in Chapter Two, these units assist and are assisted by those departments who are members of the program. Table 2 gives a breakdown of calls for 1981 by unit and by nature of emergency.

Since the number of personnel within the department was not large, the total paramedic population was contacted and invited to participate in the study. During the months of October and November 1981, the researcher met with both
the EMS Chief and the Fire Chief to gain their approval for the study. At their suggestion the researcher met with the paramedic personnel of the department during their continuing education classes. The purpose of the study was presented in great detail, questions were answered and the fact that participation was voluntary was reaffirmed to the men. At the suggestion of the department administration, the researcher also informed the men of his past emergency medical experience. These meetings were followed by a letter of introduction from the EMS Chief to the house captains of the stations where the various units were housed (See Appendix B). A week before commencement of the study a letter from the researcher explaining the study was sent to each paramedic through the department mail system (See Appendix C).

After completion of the study the researcher has agreed to make himself available to answer any questions. Further, a final report will be submitted to the EMS Chief and to the Fire Chief. Finally copies of the report will be made available to individual medics upon request.
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**TABLE 3**

**Sample Characteristics**

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<td>2. Years in department</td>
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<td>3. Years of Experience before Paramedic training</td>
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<td>7. Separated</td>
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**DATA COLLECTION**

Data collection for the study began on January 11, 1982. Originally, the plan for the study called for data collection to occur over a period of three consecutive days to insure administration of the data to each duty unit. However, due to a number of problems, including poor weather and an excessive number of emergency calls during the collection period, it took two weeks to complete the data collection.

After considering various methods of administering the tests it was decided to administer the tests within each individual fire station. While this method proved to be time consuming, it provided more personal contact and thus
generated excellent cooperation. Finally this method allowed the instrument to be administered without taking the various units out of service, which would have been necessary to execute any mass administration of the instrument.

The instruments were delivered by the researcher to each station. At that time instructions concerning how to complete the questionnaire were given to those paramedics who participated in the study. No inquiry was made as to why some did not wish to participate. Each instrument was number coded to insure confidentiality. The men were instructed to remember their number so that results could be shared with them after the study was completed. All instruments were collected at the end of the duty day. In some cases, men requested more time to complete their instruments. In these cases they were collected during their next duty day.

As was noted above, participation was voluntary. The protection of confidentiality of the subjects was of major concern. As a result, each participant was asked to read and sign a consent-to-participate form. This form was furnished by the Human Subjects Review Committee at The Ohio State University. It assures confidentiality and verifies that the research being conducted was explained to the satisfaction of the participant. (See Appendix A). The time necessary to complete the instrument amounted to an average of forty-five minutes. Since the men were
"in-service" during the test administration, work on completing the forms was often interrupted by emergency calls. This complicated matters in that some of the forms were not completed. Of the 113 paramedics in the department eight-four chose to participate in the study. Seven of these instruments were incomplete and subsequently eliminated from the data analysis. As a result, seventy-seven test packages were subjected to data analysis for the purpose of this study. This represents sixty-eight percent of the paramedic population in the Columbus Fire Department.

**INSTRUMENTATION**

For the purpose of this study the factors bearing on stress in paramedics will be divided into two components:

1. **Job Stress** - this component will be divided into two sub-divisions:
   a. Structural Stress which is defined as the more traditional aspects of job related stress including role conflict, issues of advancement and job satisfaction.
   b. Response Stress which is defined as the stress created by the nature of the emergency call itself.

2. **Personality variables** - two aspects will be examined in this component:
   a. The individual's locus of control.
   b. Whether felt anxiety is a result of the state in which he finds himself or is a trait of the individual.
It is felt that through the identification of specific aspects of these components and an examination of how these components interact, an understanding of stress as it relates to paramedics can be developed.

Instruments to be used will be as follows:

1. Job Stress
   a. The Environmental Stress Scale (Tosi and Tosi, 1970).
   b. Role Questionnaire (Rizzo, House and Lirtzman, 1970).
   c. Response Stress Scale - developed for this research (see explanation below).

2. Personality Variables
   a. State Trait Anxiety Scale (Spielberger, 1970).
   b. Internal-External Locus of Control Scale (Rotter, 1966).

DESCRIPTION OF INSTRUMENTS

The Environmental Stress Scale

This instrument was developed by Tosi and Tosi (1970) to examine organizational stress and some of its correlates in public school settings (see Appendix E). The instrument is divided into a series of three scales comprised of a total of eleven questions. Questions one through four represent a scale referred to as psychological/participation. Vroom constructed this subscale in 1960 as a method to measure the extent to which the individual feels that he influences joint decisions made with his superior. (Vroom, 1960). The test-retest reliability of the scale in Vroom's
study was .63. Validity was determined by comparing this scale to similar scales on similar samples.

Questions five through seven make up the subscale labelled attitude toward job. Tosi and Tosi (1970) termed this subscale job satisfaction which they suggest is representative of the individuals general orientation to his work situation. Slight changes in the wording were made to satisfy the nature of the subjects (paramedics). Vroom obtained a test-retest reliability over a seven month period of .75 for this subscale.

Job threat and anxiety are explored through the remaining four questions. Tosi and Tosi describe this scale as being intended to be a more specific form of the general notion of anxiety. In the study by Tosi and Tosi (1970) the subscale purported to measure the subject's concern or perceived threat about his job as it may be affected in future conditions over which he/she has little or no control. Douglas (1976) in his work on stress in teachers found a high inner-test reliability for this subscale.

Each item in the eleven item scale is to be answered by marking the most appropriate choice on a five point scale. Each of the subscales is scored separately by summing the scores for all items in the subscales for each person. Tosi and Tosi (1970) found that role conflict was negatively correlated with job satisfaction \( (r = .48, p < .01) \). Job satisfaction was not significantly related to role ambiguity \( (r = .25 p < .05) \) (p. 1071-72).
Douglas (1976) found the same negative correlation between role conflict and job satisfaction but at a smaller r (.100). The researcher has also found a significant correlation between role conflict and role ambiguity to job threat and anxiety (r = .227, p < .05). The most significant relationship between the five subscales was between psychological participation and job satisfaction (r = .423, p < .01) (p. 125-26). According to Douglas, these findings were very similar to results obtained by Wolfe, et al (1962) and Kahn et al (1964).

ROLE QUESTIONNAIRE

This questionnaire was developed by Rizzo, House and Lirtzman in 1970 (See Appendix E). It was originally developed as part of a broader survey to identify management development needs and barriers for the effective implementation of a planned management development program in a large manufacturing company. This instrument consists of twenty-nine items. Fifteen items relate to role conflict while the remainder relate to role ambiguity.

The role conflict items deal with the following areas of potential conflict within the work setting:

1. Conflict between time, resources or capabilities of the focal person and defined role behavior.

2. Conflict between several roles for the same person which require different or incompatible behaviors or changes in behavior as a function of the situation.
3. Conflict between the focal person's internal standards and the defined role behavior.

4. Conflicting expectations and organization demands in the form of incompatible policies, conflicting requests of others and incompatible standards of evaluation. (Rizzo, et.al., 1970).

The role ambiguity items are designed to examine:

1. The predictability of the outcome or responses to one's behavior.

2. The existence or clarity of behavioral requirements in terms of inputs from the environment which would serve to guide behavior and provide knowledge that behavior is appropriate.

These items reflect certainty about such things as duties, authority, allocation of time, clarity of guides, directives and policies and the ability to predict sanctions as outcomes of behavior. (Rizzo, et.al., 1970).

In the Rizzo's study subjects were requested to respond to a seven point scale ranging from very false to very true. The instrument was modified for the present study to a five point scale to maintain continuity with the other scales in the package. In the original study role measures were correlated with forty-five variables included in the study. Through factor analysis the two factors which emerged were named role conflict and role ambiguity, and they accounted for 56% of the variance of the thirty item set. (NOTE: Due to a typographical error an item was repeated unintentionally in the original study). Final
items selected for the questionnaire were only considered if they had a loading greater than .30. (Rizzo, et.al., 1970).

INTERNAL/EXTERNAL LOCUS OF CONTROL SCALE

Rotter defines internal/external locus of control in the following manner:

"... an event regarded by some persons as a reward or reinforcement may be differently perceived and reacted to by others. One of the determinants of this reaction is the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions. ... a perception of causal relationship need not be all or none but can vary in degree. When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control." (MacDonald, 1978).

The Internal/External Locus Of Control Scale (IE) was developed by Rotter and was published in 1966, in Psychological Monographs (See Appendix G). The scale consists of twenty-nine forced choice items. These items include six filler items designed to make the purpose of the test more ambiguous. Internal statements are paired
with external statements. Scores can range from zero (most internal) to twenty-three (most external). (McDonald, 1978).

Normative data are reported by Rotter (1966). For male college students (N=575) he reported a mean of 8.15 and an S.D. of 3.88. For female college students (N=605) he reported a mean of 8.42 and an S.D. of 4.06. In three separate studies reported by Rotter the scale proved to have reasonable internal consistency with an average of r .69. Further the author reports that the test-retest reliability is satisfactory with an average r of .72. (Rotter, 1966).

**STATE–TRAIT ANXIETY INVENTORY**

The State–Trait Anxiety Inventory (STAI) was developed by Spielberger, Gorsuch and Lushene in 1970 (See Appendix K). The test is designed to measure two distinct anxiety concepts:

1. **State Anxiety** (A-State).

The instrument itself consists of two twenty item scales designed to measure anxiety proneness (A-Trait) and to measure current levels of tension and apprehension (A-State).

The STAI has been used in a number of studies where the measurement of stress and anxiety were of interest. Research utilizing the STAI has involved studies with
college students (Hodges and Spielberger, 1969; Sachs and Diesenhaus, 1969; Lamb, 1969), in high school students (Taylor, Wheeler and Allman, 1968), and patient populations (Grahm, 1969; Edwards, 1969; Parrino, 1969). Very few studies using the STAI with a population in an organizational setting have been reported. Abdel-Hamil (1978) utilized the instrument in considering various elements pertaining to moderating effects on job characteristics and their relationship to job stress. Davis (1980) utilized the instrument to measure levels of stress in secretaries. The STAI was used in two studies on paramedic stress. Scott (1980) utilized this instrument to measure levels of stress between "burned-out" and "non burned-out" paramedics in his dissertation. Cox (1981) utilized the instrument to measure levels of stress in paramedics as compared to EMT-A's within the Salt Lake City, Utah, Fire Department.

Emphasis in the current study will be on the concept of trait anxiety, though both concepts will be considered in the research analysis. Trait anxiety is important in that like potential energy, it indicates differences in the strength of a latent disposition to manifest a certain type of reaction. Spielberger notes that in general, those with high A-Trait scores will exhibit A-State elevations more than low A-Trait individuals. He further suggests this phenomenon is due to a tendency by A-Trait individuals to react to a wider range of situations as dangerous or threatening. (Spielberger, 1970).
Normative data for the instrument are available for large samples of college freshman, undergraduate college students and high school students. In two studies reported by Spielberger a mean of fifty with an SD of ten were reported. These scores are based on a normalized T-score system. The conversion of raw scores to T-scores, as well as normative data can be found in the STAI Manual. (Spielberg, 1970). For the purposes of this study, the normative data for undergraduate college students will be used to ascertain the scores of the subjects.

Spielberger et. al. (1970) report a reasonable high test-retest correlation on the A-Trait Scale ranging from .79 to .86. Those for the A-State Scale were relatively low ranging from .16 to .54 with a median r of only .32 for the six subgroups used in the study. The low r's for the State Scale were anticipated due to the influence of unique situational factors existing at the time of the testing. Alpha coefficients for the STAI items range from .83 to .92 for the A-State items and those for the A-Trait items were equally as high.

Spielberger (1970) reports that in the construction of the STAI individual items were required to meet prescribed A-State and A-Trait validity criteria at each stage of the test development process (p. 10). A full explanation of this evaluation and validation can be found in the STAI Manual, (Appendix B) (1970).
RESPONSE STRESS SCALE

The Response Stress Scale was developed for this project (See Appendix D). This instrument consists of a demographic information sheet and two scales:

1. The Response Stress Scale-Type of Calls.
2. The Response Stress Scale-Situations.

The Type of Call Scale consists of twenty-five types of calls paramedics and EMT-A's typically respond to. The Situations Scale consists of nineteen situations or characteristics encountered on a typical emergency response. The subject is asked to rate these items on a five point scale ranging from "no stress" to "intense stress". The items for these scales were developed through situations experienced by the researcher and through assistance provided by the faculty of the Columbus Technical Institute's Paramedic Training Program.

A pilot study was done prior to the execution of this study. Fifteen subjects were picked at random from fire departments around Columbus who have automatic response agreements with the Columbus Fire Department. All respondents were certified paramedics. The reliability analysis was executed through the use of the Statistical Package for the Social Sciences (SPSS) computer program utilizing the sub-program RELIABILITY. The results displayed high Alpha coefficients which suggest a highly reliable instrument. Reliability coefficients can be found in Table 4.
TABLE 4
RELIABILITY OF THE RESPONSE STRESS SCALE

<table>
<thead>
<tr>
<th>SCALE</th>
<th>ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Stress-type of call</td>
<td>0.95541</td>
</tr>
<tr>
<td>Response Stress-situations</td>
<td>0.90857</td>
</tr>
</tbody>
</table>

STATISTICAL METHODOLOGY

All data obtained from the paramedics were placed on key punch cards and the statistical analysis was performed through the use of an IBM 370 computer at The Ohio State University Data Center. Statistical computations were performed through two programs: Statistical Package for the Social Sciences (SPSS) which was developed by Nie et al. (1975) and The Statistical Analysis System (SAS) developed in 1966. (SAS Staff, 1979).

All demographic data were organized through the FREQ procedure of SAS. This procedure produces frequency tables and descriptive statistics for all questions in the test instruments. Secondly, a correlational table was generated through the utilization of the CORR procedure of SAS. The CORR procedure computes correlational coefficients between variables including Pearson product-moment correlations and significance probabilities. These are printed in a rectangular table along with univariate statistics. (SAS Staff, 1979). Thirdly, various scales were subjected to an examination of their reliability through the use of the SPSS subprogram RELIABILITY. This subprogram provides a
means for evaluating multiple-item additive scales through the computation of widely recognized coefficients of reliability. In this study the reliability analysis used was Cronbach's alpha and the standardized item alpha. (Hull, Nie, 1981).

As noted in Chapter one, three research questions are addressed in this research. Question one was addressed by ranking stressors found on the Response Stress-Type of Call Scale and the Response Stress-Situations Scale. Recall that both of these scales deal with specific stress situations encountered by the paramedic within the limits of his duties. Ranking was accomplished by subjecting the items in both scales to the RANK subprogram for SAS.

Research question two was addressed through the process of multiple regression analysis and factor analysis. Multiple regression analysis was utilized to identify the independent variable group which displayed the strongest relationship to the dependent variables. The independent variables consisted of the subscales from the various instruments used in the study as well as age and experience. Multiple regression is a general technique through which one can analyze the relationship between a dependent variable and a set of independent or predictor variables (Kerlinger, 1973). This process may be viewed either as a descriptive tool by which a linear dependence of one variable on others is summarized, or as an inferential tool by which the relationships in the
population are evaluated from examination of sample data (Nie, 1975). Within this study, the multiple regression analysis was used in a descriptive manner. This statistical procedure was executed through the SPSS subprogram REGRESSION.

A factor analysis on the variables noted above was executed to determine the factors underlying the variables themselves. Three ordinary steps makeup factor analysis. These are:

1. Preparation of the correlational matrix.
2. Extracation of initial factors—the exploration of possible data reduction.

The factor analysis of the data was executed through the use of the SAS program FACTOR. This program considers all factors above the point of discontinuity. This criterion is based on the belief that when the last meaningful or substantively important factor is extracted the eigen values will show a sharper drop than for adjacent factors. (Rummel, 1970). The two main types of rotations are orthogonal and oblique. Orthogonal rotations maintain independence of factors. Oblique rotations take into account that fact that actual factors are not usually uncorrelated and thus conform to psychological "reality" (Kerlinger, 1973). Secondly, oblique rotations generate
additional information from the analysis. (Rummel, 1970). As a result, an oblique rotation was executed utilizing the PROMAX option of the SAS subprogram.

Research question three was addressed by first reporting on the results of scores on the State Trait Anxiety Inventory and the Internal/External Locus of Control instrument. Subsequent scores were then divided into high medium and low levels of stress. Finally, the correlational coefficients of these scales were examined to determine the relationship between individual reaction to stress and the personality variable of locus of control.

**SUMMARY**

This chapter has discussed the method of sample selection. Instruments used to gather the data, the data collection process and the methods used to analyze the data. The following chapter will present an analysis of the data. It will consist of analysis of the research questions and a short discussion of selected demographic information.
CHAPTER IV

ANALYSIS OF RESULTS

This chapter contains the results obtained in this study. First, the results of the reliability analysis of selected scales will be presented. Second, the three research questions presented in Chapter one will be discussed. Thirdly, selected demographic information will be presented.

RELIABILITY RESULTS

The following scales were subjected to a test of reliability:

1. Response Stress-Type of Calls (RSTRESS).
2. Response Stress-Situations (SITRESS).
3. Environmental Stress Scale.
4. The Role Questionnaire
5. State Trait Anxiety Inventory.

The reliability subprogram of SPSS was utilized for this operation. Table 5 reflects the results of the reliability procedure.
TABLE 5
RELIABILITY RESULTS OF SELECTED SCALES

<table>
<thead>
<tr>
<th>SCALE</th>
<th>ALPHA COEFFICIENTS</th>
<th># OF RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSTRESS</td>
<td>0.94</td>
<td>77</td>
</tr>
<tr>
<td>SITRESS</td>
<td>0.90</td>
<td>77</td>
</tr>
<tr>
<td>Environmental Stress Scale</td>
<td>0.57</td>
<td>77</td>
</tr>
<tr>
<td>Role Questionnaire</td>
<td>0.68</td>
<td>77</td>
</tr>
<tr>
<td>State Trait Scale-State</td>
<td>0.94</td>
<td>77</td>
</tr>
<tr>
<td>State Trait Scale-Trait</td>
<td>0.90</td>
<td>77</td>
</tr>
</tbody>
</table>

As can be seen, the Environmental Stress Scale displays the lowest level of reliability with this type of population with an alpha coefficient of 0.57. The Role Questionnaire displayed the next lowest level of reliability with an alpha coefficient of 0.68. The remaining scales: SITRESS (alpha = 0.90), State-Trait Scale-Trait (alpha = 0.90), RSTRESS (alpha = 0.94), and State-Trait Scale-State (alpha = 0.94) all show high levels of reliability.

RESEARCH QUESTIONS

Research Question 1: What are the specific stressors which are observed to impact on the paramedic within the limits of his job?

The approach to this questions was through rating the events listed on the Response Stress-Type of Call and the Response Stress-Situation instruments. Ranking of specific
"run" related stressors are from highest to lowest. Tables 6 and 7 provided a listing of these stressors. The four major stressors in each table are:

**Response Stress-Type-of-Call:**
1. Infant death.
2. Child abuse.

**Response Stress Situations:**
1. Being confronted with physical danger.
2. Using inadequate equipment and material.
3. Administering care to a fellow firefighter.

It is interesting to note that these results are strikingly similar to Cox's findings in his study of Salt Lake City Paramedics and EMT-A's. Infant death, child abuse, mass casualties and physical danger rated as the top four stressors in his ranking of stressors. (Cox, 1981).

**Research Question 2:** Does a consistent group of stressors exist among subjects under study?

This question was approached by assuming that State and Trait Anxiety were symptomatic of stress levels within the individual. The following variables were hypothesized to have some effect on these two types of anxiety:

1. Response Stress-Type of Call (Rstress).
2. Response Stress-Situations (Sitress).
<table>
<thead>
<tr>
<th>RESPONSE STRESSOR</th>
<th>NO STRESS</th>
<th>VERY LITTLE STRESS</th>
<th>MODERATE STRESS</th>
<th>QUITE STRESSFUL</th>
<th>INTENSE STRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Infant Death</td>
<td>1</td>
<td>4</td>
<td>19</td>
<td>37</td>
<td>16</td>
</tr>
<tr>
<td>2. Child Abuse</td>
<td>3</td>
<td>3</td>
<td>21</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>3. Child Birth (with complications)</td>
<td>1</td>
<td>3</td>
<td>29</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>4. Mass casualties</td>
<td>2</td>
<td>9</td>
<td>27</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>5. Cardiac Arrest</td>
<td>5</td>
<td>9</td>
<td>29</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>6. Severe Burns</td>
<td>3</td>
<td>13</td>
<td>28</td>
<td>29</td>
<td>4</td>
</tr>
<tr>
<td>7. Pediatric Emergency</td>
<td>3</td>
<td>15</td>
<td>24</td>
<td>33</td>
<td>1</td>
</tr>
<tr>
<td>8. Abusive Patient</td>
<td>4</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>9. Multiple Trauma Victims</td>
<td>4</td>
<td>17</td>
<td>27</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>10. Mentally Disturbed Patient</td>
<td>5</td>
<td>23</td>
<td>33</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>11. Extrication of Vehicular Accident Victims</td>
<td>5</td>
<td>24</td>
<td>34</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>12. Handling/Viewing Mutilated Bodies</td>
<td>12</td>
<td>40</td>
<td>17</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>13. Shooting or Stabbing Victim</td>
<td>8</td>
<td>28</td>
<td>29</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>14. Severe Bleeding</td>
<td>8</td>
<td>28</td>
<td>32</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>15. False Alarms/Unnecessary Calls</td>
<td>10</td>
<td>25</td>
<td>20</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>16. Drug Overdose</td>
<td>11</td>
<td>34</td>
<td>21</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>17. Suicide Victim</td>
<td>14</td>
<td>26</td>
<td>28</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>18. Suicide Attempt</td>
<td>9</td>
<td>37</td>
<td>23</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>19. Auto Accident with Injuries</td>
<td>13</td>
<td>29</td>
<td>31</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>20. Treatment of Elderly Patient</td>
<td>12</td>
<td>40</td>
<td>17</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>21. Child Birth (normal)</td>
<td>14</td>
<td>37</td>
<td>17</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>22. Poisoning</td>
<td>14</td>
<td>35</td>
<td>22</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>23. Drunken Patient</td>
<td>25</td>
<td>26</td>
<td>17</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>24. Call of Unknown Nature</td>
<td>17</td>
<td>37</td>
<td>21</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>25. Medical Emergencies</td>
<td>19</td>
<td>37</td>
<td>17</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>RESPONSE STRESSOR</td>
<td>NO STRESS</td>
<td>VERY LITTLE STRESS</td>
<td>MODERATE STRESS</td>
<td>QUITE STRESSFUL</td>
<td>INTENSE STRESS</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1. Being confronted with physical danger.</td>
<td>2</td>
<td>12</td>
<td>22</td>
<td>32</td>
<td>8</td>
</tr>
<tr>
<td>2. Inadequate equipment.</td>
<td>4</td>
<td>16</td>
<td>21</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>3. Administering care to a fellow firefighter.</td>
<td>2</td>
<td>20</td>
<td>31</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>4. Taking responsibility for human life.</td>
<td>8</td>
<td>19</td>
<td>29</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>5. Number of responses per shift.</td>
<td>13</td>
<td>11</td>
<td>27</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>6. Answering unnecessary calls.</td>
<td>15</td>
<td>14</td>
<td>22</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>7. Lack of support for decisions made in the field.</td>
<td>17</td>
<td>23</td>
<td>21</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>8. Emotional demands.</td>
<td>9</td>
<td>29</td>
<td>30</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>9. Not enough living time in quarters.</td>
<td>16</td>
<td>24</td>
<td>24</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>10. Possibility of having an accident while responding to a call.</td>
<td>12</td>
<td>37</td>
<td>20</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>11. The type of emergency to which we are responding.</td>
<td>15</td>
<td>26</td>
<td>28</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>12. Making field decisions based on a written protocol.</td>
<td>16</td>
<td>35</td>
<td>22</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>13. The physical demands encountered during a response.</td>
<td>23</td>
<td>28</td>
<td>22</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>14. Making transport decisions in a situation which does not appear to be life threatening.</td>
<td>23</td>
<td>35</td>
<td>16</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>15. Being officer in charge of the call.</td>
<td>27</td>
<td>29</td>
<td>17</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>16. Communications with the dispatcher.</td>
<td>29</td>
<td>31</td>
<td>9</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>17. Relationships with emergency room personnel.</td>
<td>29</td>
<td>35</td>
<td>10</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>18. Relationships with fellow team members.</td>
<td>39</td>
<td>28</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>19. Making field decisions without direct communication with the hospital.</td>
<td>43</td>
<td>24</td>
<td>7</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
3. Psychological Participation.
4. Job Satisfaction.
5. Job Threat or Anxiety.
6. Role Conflict.
7. Role Ambiguity.
8. Internal/External Locus of Control.
9. Age.
10. Experience.

While Internal/External Locus of Control; age and experience are not stressors in the truest sense, they have been shown to contribute to the stress reactivity of the individual in past studies. (Kobasa, 1979, Cox, 1978).

Two multiple regression analyses were performed to identify the independent variable group with the strongest relationship to the dependent variables of State Anxiety and Trait Anxiety. Examination of the regression analysis in regards to state anxiety indicates that nine predictor variables were entered before the F level became insufficient for further computation. The variables of Response Stress-Situations and Job Satisfaction were the best group of independent variables accounting for 24.9% of the variance in state anxiety. The total nine independent variables accounted for 28.9% of the variance in this dependent variable. It is also interesting to note that the second independent variable of Job Satisfaction displayed an inverse relationship to State Anxiety. This seems to suggest that as job satisfaction is reduced the
amount of State Anxiety is increased. The $R^2$'s, $R^2$
changes, Beta Weights and F statistics for the regression
analysis on State Anxiety can be found in Table 8.

Examination of the regression analysis in regards to
Trait Anxiety indicated that all the independent variables
were entered before the F level became insufficient for
further computations (See Table 9). Response Stress-Type
of Call and Job Satisfaction proved to be the strongest
group independent variables accounting for 24.5% of the
variance. The total ten independent variables accounted
for 29.48% of the variance. Job satisfaction again
displayed an inverse relationship with the dependent
variable.

A factor analysis was executed to identify probable
factors underlying the variables in this study. Twelve
factors were initially taken from the twelve variables.
Four factors were retained at the point of discontinuity.
(See Chapter 3). This suggests that a four factor solution
would be most appropriate in this case.

An oblique rotation was used in analyzing the data.
From the Promax Rotated Factor Pattern Matrix (See Table
10) significant loadings can be seen on factor I by the
variables Trait Anxiety (.8108) and State Anxiety (.6943).
High negative loadings on this factor were seen with job
satisfaction (.7187) and Psychological Participation
(-.5601). Significant loadings on Factor II were seen
with the variables of age (.9423) and experience (.9180).
Negative loadings were observed with the variable of Internal/External Locus of Control (−0.5511). Factor three displayed loadings by role conflict (0.9873) and role ambiguity (0.8473). There were no negative loadings of great significance within this factor. Factor four revealed significant loadings by Response Stress-Type of Run (0.7835), Job Threat (0.7747) and by Response Stress-Situation (0.6512). All of the variables with the exception of role conflict displayed some loading on this factor. Correlations between the significant variables and factors ranged from .69 to .94.

Factor I with its high loading on the interpersonal traits of anxiety seems to suggest levels of intrapersonal stress. Thus the factor was labeled "Intrapersonal Stress". Factor II consists of significant loadings on age and experience. These variables can be described in terms of overall life experience. Thus this factor has been labeled "Professional-Personal Experience". Factor III displayed significant loadings on role conflict and role ambiguity. Recall that these two variables have been identified by other researchers as significant in the level of perceived job stress within an organization. As a result, Factor III is labeled "Organizational Stress". Finally, factor IV loads on response stress-type of call, response stress-situations and job threat and anxiety. These variables represent items that can be seen as external to the individual but which effect him in a
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>$R^2$</th>
<th>$R^2$ CHANGE</th>
<th>BETA</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Stress-Type of Call</td>
<td>0.24900</td>
<td>0.02249</td>
<td>0.29531</td>
<td>3.279*</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.2265</td>
<td>0.0602</td>
<td>-0.2422</td>
<td>4.566*</td>
</tr>
<tr>
<td>Response Stress-Situation</td>
<td>0.1663</td>
<td>0.1663</td>
<td>-0.1020</td>
<td>0.386</td>
</tr>
<tr>
<td>Experience</td>
<td>0.2744</td>
<td>0.0254</td>
<td>-0.2125</td>
<td>0.973</td>
</tr>
<tr>
<td>Psychological Participation</td>
<td>0.2831</td>
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<td>-0.0853</td>
<td>0.539</td>
</tr>
<tr>
<td>Role Conflict</td>
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<td>0.0020</td>
<td>0.8089</td>
<td>0.389</td>
</tr>
<tr>
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<td>0.2873</td>
<td>0.0021</td>
<td>-0.8543</td>
<td>0.176</td>
</tr>
<tr>
<td>Age</td>
<td>0.2884</td>
<td>0.0010</td>
<td>0.8637</td>
<td>0.898</td>
</tr>
<tr>
<td>Job Threat</td>
<td>0.2893</td>
<td>0.0008</td>
<td>-0.8304</td>
<td>0.878</td>
</tr>
</tbody>
</table>

* $P < .05$

Overall $F$ at last step $= 2.89582$

---

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>$R^2$</th>
<th>$R^2$ CHANGE</th>
<th>BETA</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Stress-Type of Call</td>
<td>0.1869</td>
<td>0.1869</td>
<td>0.4399</td>
<td>7.128*</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.2448</td>
<td>0.0579</td>
<td>-0.2541</td>
<td>4.921*</td>
</tr>
<tr>
<td>Experience</td>
<td>0.2717</td>
<td>0.0268</td>
<td>-0.3185</td>
<td>2.169</td>
</tr>
<tr>
<td>Age</td>
<td>0.2772</td>
<td>0.0055</td>
<td>0.2105</td>
<td>0.917</td>
</tr>
<tr>
<td>Internal/External Locus of Control</td>
<td>0.2836</td>
<td>0.0064</td>
<td>0.1646</td>
<td>0.846</td>
</tr>
<tr>
<td>Role Conflict</td>
<td>0.2892</td>
<td>0.0056</td>
<td>-0.1309</td>
<td>0.416</td>
</tr>
<tr>
<td>Response Stress-Situation</td>
<td>0.2917</td>
<td>0.0024</td>
<td>-0.0776</td>
<td>0.222</td>
</tr>
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<td>Job Threat</td>
<td>0.2936</td>
<td>0.0018</td>
<td>0.4193</td>
<td>1.133</td>
</tr>
<tr>
<td>Role Ambiguity</td>
<td>0.2946</td>
<td>0.0010</td>
<td>-0.0463</td>
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</tr>
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<td>Psychological Participation</td>
<td>0.2948</td>
<td>0.0001</td>
<td>-0.0136</td>
<td>0.914</td>
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* $P < .05$

Overall $F$ at last step $= 2.6342$
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Trait Anxiety</td>
<td>0.8108</td>
<td>-0.0775</td>
<td>0.0282</td>
<td>0.1277</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>0.6943</td>
<td>-0.0731</td>
<td>-0.0733</td>
<td>0.2249</td>
</tr>
<tr>
<td>Internal/External Locus</td>
<td>-0.1243</td>
<td>-0.5512</td>
<td>0.3521</td>
<td>0.1262</td>
</tr>
<tr>
<td>Response Stress-Type of Call</td>
<td>0.1994</td>
<td>0.0461</td>
<td>-0.0608</td>
<td>0.7835</td>
</tr>
<tr>
<td>Response Stress-Situations</td>
<td>0.3202</td>
<td>-0.0205</td>
<td>0.0424</td>
<td>0.6513</td>
</tr>
<tr>
<td>Psychological Participation</td>
<td>-0.5601</td>
<td>-0.1018</td>
<td>-0.3673</td>
<td>0.1066</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.7188</td>
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<td>0.0690</td>
<td>0.2046</td>
</tr>
<tr>
<td>Job Threat/Anxiety</td>
<td>-0.3460</td>
<td>0.0378</td>
<td>0.0830</td>
<td>0.7747</td>
</tr>
<tr>
<td>Role Conflict</td>
<td>0.0865</td>
<td>0.0263</td>
<td>0.9074</td>
<td>0.0564</td>
</tr>
<tr>
<td>Role Ambiguity</td>
<td>-0.0583</td>
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<td>0.8473</td>
<td>0.0366</td>
</tr>
<tr>
<td>Age</td>
<td>0.0021</td>
<td>0.9423</td>
<td>0.0452</td>
<td>0.0410</td>
</tr>
<tr>
<td>Experience</td>
<td>-0.0605</td>
<td>0.9180</td>
<td>0.0662</td>
<td>0.0909</td>
</tr>
</tbody>
</table>
stressful manner. Further they seem to represent a form of stress which is separate from job stress as defined in a traditional manner. Thus it seems logical to tie this factor in with stress experienced in conjunction with emergency calls and so Factor IV has been identified as "Response Stress".

The Promax Loadings within the four factors suggest strong relationships (high, significant correlations) to the predictor variables represented in the regression table. The following predictors seem to be representative of more generalizable factors:

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Response Stress-Type Call</td>
<td>IV Response Stress</td>
</tr>
<tr>
<td>2. Response Stress-Situations</td>
<td>IV Response Stress</td>
</tr>
<tr>
<td>3. Age</td>
<td>II Professional-Personal-Exp</td>
</tr>
<tr>
<td>4. Experience</td>
<td>II Professional-Personal-Exp</td>
</tr>
<tr>
<td>5. Role Conflict</td>
<td>III Organizational Stress</td>
</tr>
<tr>
<td>6. Role Ambiguity</td>
<td>III Organizational Stress</td>
</tr>
</tbody>
</table>

From the above, it appears that a consistent group of stressors exists for the subjects in the study. These are the levels of stress created by types of calls, situations on call and the lowering of job satisfaction. The
underlying factors that these variables represent are: 
Response Stress, Professional-Personal Experience, and 
Organizational Stress.

An examination of the correlational matrix found in 
Table 18 suggests some interesting results. Role conflict 
was negatively correlated with psychological participation 
($r = .24 \ p < .05$). This finding is similar to Douglas' 
finding in his study of teachers in 1976, in which he 
reported a significant relationship between these two 
variables. (p. 125-26). Role conflict and job 
satisfaction were not significantly correlated ($r = .23 \ p < 
.05$). This finding is in contrast to the Tosi and Tosi 
study (1970) wherein these researchers reported a negative 
correlation between these two variables. However, this 
finding is similar to the results of the Hamner and Tosi 
study (1974) in which no correlation was found between 
these two variables. It is also interesting to note that 
job satisfaction was negatively correlated with state 
anxiety ($r = .31 \ p < .05$) and trait anxiety ($r = .33 \ p < 
.05$).

Research Question 3: What relationship exists between 
individual reaction to stress and selected personality 
characteristics?

To answer this question, it was first necessary to 
examine the scores on the scales of the State-Trait Anxiety 
Inventory and the Internal/External Locus of Control Scale. 
The response to the State and Trait Anxiety scales are
described for the study group as compared to a norm group outline by Spielberger (1970). In this case the norm group was undergraduate male college students. Recall that the A-Trait Score is regarded as a measure of relatively stable states of anxiety or stress which tends to be constant over time. The A-State score is an indicator of levels of transitory anxiety experienced by the subject. Table 11 displays the comparison between the study group and the normative group for both of these scales.

TABLE 11
COMPARISON OF A-TRAIT AND A-STATE SCORES

<table>
<thead>
<tr>
<th>Participate</th>
<th>Norm Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A-State</td>
</tr>
<tr>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>32.49</td>
<td>10.17</td>
</tr>
<tr>
<td>32.36</td>
<td>7.82</td>
</tr>
</tbody>
</table>

As can be seen both of the mean scores of the paramedics were below those of the norm group. This would suggest that the paramedics as a group are below the average in terms of both of the scales on the STAI. However, this is only part of the story. The answers were divided into three ranges (low stress, medium stress, high stress) to examine the percent of the sample under high levels of stress. The division was made by dividing the sample in
thirds. The results of this division are found in Table 12. Sixteen point nine percent of the sample displayed high state anxiety and 15.6% displayed high trait anxiety based on this division. Thus, by utilizing trait anxiety as a measure of levels of stress it could be stated that 15.6% of the sample are experiencing high levels of stress in their jobs, and perhaps, in their lives.

### TABLE 12

**LEVELS OF STRESS BASED ON A-TRAIT AND A-STATE SCORES**

<table>
<thead>
<tr>
<th>Trait Anxiety:</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Stress</td>
<td>38</td>
<td>49.3</td>
</tr>
<tr>
<td>Medium Stress</td>
<td>27</td>
<td>35.1</td>
</tr>
<tr>
<td>High Stress</td>
<td>12</td>
<td>15.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Anxiety:</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Stress</td>
<td>33</td>
<td>42.9</td>
</tr>
<tr>
<td>Medium Stress</td>
<td>31</td>
<td>40.2</td>
</tr>
<tr>
<td>High Stress</td>
<td>13</td>
<td>16.9</td>
</tr>
</tbody>
</table>

The scores of the Internal/External Locus of Control Scale were compared in a similar manner. The scores of the paramedics were compared to a normative group developed by Rotter (1966). The results of this comparison can be found in Table 13. Results reveal that the mean for the paramedics was 7.92% while for the norm group it was 8.15%. This suggests that as a group, paramedics display similar levels of inner locus of control as the normative group.
As with the STAI scores the sample was divided into high external locus of control, medium and low external locus of control. These results are reflected in Table 14. As can be seen 14.3% displayed some degree of high externality based on this type of division.

Results in the correlational matrix suggest no correlation between locus of control and role ambiguity or job satisfaction (r = .23 p < .05). This finding is different than findings reported by Organ and Green (1975). Recall that their findings suggest a correlation between both role ambiguity and job satisfaction. The findings suggest locus of control and age are negatively correlated (r = .32 p < .05). In addition, locus of control and experience are also negatively correlated (r = .26 p < .05). Both of these findings are similar to those reported
by Lester and Genz (1978) in their study of policemen. This seems to suggest that as with policemen, the paramedics under study gain a greater sense of inner control as their age and experience grows.

The correlational coefficients between the I-E scale and the A-Trait and A-State Scales were positive in nature but display very weak relationship. Thus, while a relationship exists between stress reactivity and the selected personality characteristic of locus of control it is a very weak relationship.

SELECTED DESCRIPTIVE INFORMATION

Finally, it is important to gain some insight into the paramedic as a person. To accomplish this the subjects were asked to complete a personal questionnaire. Some of the more interesting information will be presented below.

Sick time taken by the subjects ranged from zero to ninety days. Of the time taken off due to sickness twelve subjects reports that time off was due to the job. A mean of 15.5 days was obtained in this category.

The paramedics were asked their perception of their personal safety in comparison to the level of personal safety experienced by firefighters. Forty point eight percent of the paramedics responding to this question felt that they experience the same level of personal safety. Twenty-three point seven percent felt their job was safer than firefighters, twenty-five percent felt their job was
not as safe and 10.5% felt their job was much more
dangerous than firefighters (See Table 15).

**TABLE 15**

**LEVELS OF PERSONAL SAFETY AS COMPARED TO FIREFIGHTERS**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safer</td>
<td>18</td>
<td>23.7%</td>
</tr>
<tr>
<td>Same</td>
<td>31</td>
<td>40.8%</td>
</tr>
<tr>
<td>Not as safe</td>
<td>19</td>
<td>25.0%</td>
</tr>
<tr>
<td>Much more dangerous</td>
<td>8</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

While the majority of paramedics felt threat to their safety was no greater than firefighters, the majority did feel that overall stress levels of their job was more stressful than firefighters. Table 16 reveals that no paramedic saw their job as less stressful than firefighters. Seven point nine percent felt that stress levels were equal to firefighters. Ninety-two point one percent felt that their job was more stressful than firefighters.

**TABLE 16**

**OVERALL STRESS AS COMPARED TO FIREFIGHTER STRESS**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>6</td>
<td>7.9%</td>
</tr>
<tr>
<td>More stressful</td>
<td>70</td>
<td>92.1%</td>
</tr>
</tbody>
</table>
Seventy of the paramedics were married at the time they began service as paramedics. Six reported they were single at that time and one was divorced. Currently sixty paramedics are married, five are single, nine are divorced and three are separated. The paramedics were asked if the reported changes were a result of their job. Of the thirty-eight responding to this question, twenty-six stated that the job had no effect on the change in their marital status. Twelve reported that their job contributed to their change in marital states (See Table 17).

**TABLE 17**

<table>
<thead>
<tr>
<th>Marital Status of Paramedics</th>
<th>Beginning of Service</th>
<th>Currently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Single</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Separated</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Change as a result of the job:
Yes 12(31.6%)  No 26(68.4%)

Finally, the paramedics were asked to respond to two questions relating to their job. The first question asked the men to list three things that could be changed that would make your job easier. Sample answers included:

1. "Screening of runs, so we wouldn't have to run on non-emergencies calls."
2. "More people on the vehicles."
3. "More support in the field."
4. "Fire Department with 'open ears'."
5. "Less bureaucratic harassment".
The second question asked the men to list three things they like about their job. Sample answers to this question included:

1. "Contact with the public".
2. "Helping people".
3. "The hours, wages and benefits".
4. "Learning new things to help people".
5. "Team work".
6. "The people I work with".

**SUMMARY**

This chapter has present the results of the analysis of the data. It included the results of the reliability study on selected scales, analysis of data pertinent to the three research questions presented in Chapter one and the presentation of selected descriptive information concerning the paramedics taking part in the study. The following chapter will present a summary and conclusions drawn from the study.
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>STATE ANXIETY</th>
<th>TRAIT ANXIETY</th>
<th>INTERNAL/EXTERNAL LOCUS OF CONTROL</th>
<th>RESPONSE STRESS TYPE OF RUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety</td>
<td>1.0000</td>
<td>0.8750*</td>
<td>0.9534</td>
<td>0.4376*</td>
</tr>
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<td>Trait Anxiety</td>
<td>0.8750*</td>
<td>1.0000</td>
<td>0.6694</td>
<td>0.4099*</td>
</tr>
<tr>
<td>Internal/External</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>0.9534</td>
<td>0.06694</td>
<td>1.0000</td>
<td>-0.2533*</td>
</tr>
<tr>
<td>Response Stress Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Call</td>
<td>0.4376*</td>
<td>0.4099*</td>
<td>-0.0253*</td>
<td>1.0000</td>
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<tr>
<td>Response Stress Situations</td>
<td>0.3477*</td>
<td>0.4120*</td>
<td>0.0215</td>
<td>0.7453*</td>
</tr>
<tr>
<td>Psychological Participation</td>
<td>-0.0932</td>
<td>-0.2328</td>
<td>-0.0490</td>
<td>-0.2589</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.3119*</td>
<td>-0.3278</td>
<td>-0.0361</td>
<td>-0.1435</td>
</tr>
<tr>
<td>Job Threat</td>
<td>0.1449</td>
<td>0.0222</td>
<td>0.1378</td>
<td>0.2576*</td>
</tr>
<tr>
<td>Role Conflict</td>
<td>-0.1063</td>
<td>0.0884</td>
<td>0.1962</td>
<td>-0.1086</td>
</tr>
<tr>
<td>Role Ambiguity</td>
<td>-0.0887</td>
<td>-0.0454</td>
<td>0.1177</td>
<td>-0.1066</td>
</tr>
<tr>
<td>Age</td>
<td>-0.1660</td>
<td>-0.1884</td>
<td>-0.3237*</td>
<td>-0.1231</td>
</tr>
<tr>
<td>Experience</td>
<td>-0.1896</td>
<td>-0.2166</td>
<td>-0.2636*</td>
<td>-0.0834</td>
</tr>
</tbody>
</table>

* < .05
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>RESPONSE STRESS SITUATION</th>
<th>PSYCHOLOGICAL PARTICIPATION</th>
<th>Job SATISFACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety</td>
<td>0.3478*</td>
<td>-0.0932</td>
<td>-0.3119*</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>0.4121*</td>
<td>-0.2328</td>
<td>-0.3278*</td>
</tr>
<tr>
<td>Internal/External Locus of Control</td>
<td>0.0215</td>
<td>-0.0498</td>
<td>-0.0361</td>
</tr>
<tr>
<td>Response Stress Type of Call</td>
<td>0.7453*</td>
<td>-0.0383</td>
<td>-0.1435</td>
</tr>
<tr>
<td>Response Stress Situations</td>
<td>1.0000</td>
<td>-0.2589*</td>
<td>-0.2196</td>
</tr>
<tr>
<td>Psychological Participation</td>
<td>-0.2589*</td>
<td>1.0000</td>
<td>0.26991*</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.2196</td>
<td>0.2699*</td>
<td>1.0000</td>
</tr>
<tr>
<td>Job Threat</td>
<td>0.1781</td>
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<td>0.0055</td>
</tr>
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<td>-0.2364*</td>
<td>0.0926</td>
</tr>
<tr>
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<td>-0.0844</td>
<td>0.0735</td>
</tr>
<tr>
<td>Age</td>
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<td>-0.0344</td>
<td>0.0886</td>
</tr>
<tr>
<td>Experience</td>
<td>-0.1982</td>
<td>0.0584</td>
<td>0.0225</td>
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</table>

* < .05
### Table 18 (Continued)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>JOB THREAT</th>
<th>ROLE CONFLICT</th>
<th>ROLE AMBIGUITY</th>
<th>AGE</th>
<th>EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Anxiety</td>
<td>0.1449</td>
<td>-0.1063</td>
<td>-0.0887</td>
<td>-0.1660</td>
<td>-0.1896</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>0.0223</td>
<td>0.0084</td>
<td>-0.0454</td>
<td>-0.1884</td>
<td>-0.2166</td>
</tr>
<tr>
<td>Internal/External</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>0.1378</td>
<td>0.1962</td>
<td>0.1177</td>
<td>-0.3237</td>
<td>-0.2636</td>
</tr>
<tr>
<td>Response Stress Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Call</td>
<td>0.2576*</td>
<td>-0.1086</td>
<td>-0.1066</td>
<td>-0.1231</td>
<td>-0.0834</td>
</tr>
<tr>
<td>Response Stress Situations</td>
<td>0.1781</td>
<td>-0.0391</td>
<td>-0.0791</td>
<td>-0.1509</td>
<td>-0.1982</td>
</tr>
<tr>
<td>Psychological Participation</td>
<td>-0.0158</td>
<td>-0.2364*</td>
<td>-0.0844</td>
<td>-0.0344</td>
<td>0.0584</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.0055</td>
<td>0.0926</td>
<td>0.0735</td>
<td>0.0886</td>
<td>0.0225</td>
</tr>
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<td>Job Threat</td>
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CHAPTER V
SUMMARY AND CONCLUSIONS

This study was designed to expand descriptive information concerning psycho-social stress as it relates to paramedics. As the literature review suggests, a major omission in the research exists in this area. While some theoretical work has been advanced, little empirical research has been done to identify specific sources of stress in paramedics. An online search of the literature revealed only four empirical studies completed to date on stress factors in paramedics. In the present study four research objectives were defined and addressed through three research questions. A complete analysis of these findings was presented in Chapter Four. These findings will be summarized in this chapter followed by a discussion of conclusions drawn from the research findings. Finally implications and recommendations for further research in this area of paramedic stress will be discussed.

SUMMARY OF PROCEDURE

The sample for this study consisted of seventy-seven subjects representing sixty-eight percent of the population
of paramedics employed by the Columbus, Ohio Fire Department. The subjects were administered the instruments during a two week period in January, 1982. Subjects consisted of those who voluntarily agreed to take part in the study.

The instruments used in data collection are notes in the following:

The **Response Stress Scale**, which consists of a personal questionnaire, a scale to assess reported stress due to type of calls and a scale to assess reported stress due to situations encountered on a call. Information gathered from this instrument provided a measure of stress generated due to emergency responses.

Two instruments were utilized to assess the amount of organizational stress experienced by the paramedic. First, the **Environmental Stress Scale** by Tosi, Tosi and Vroom was administered. This scale consists of three subscales designed to explore levels of psychological participation, job satisfaction and job threat or anxiety. Second, the **Role Questionnaire** developed by Rizzo, House and Lirtzman was administered. This instrument is designed to assess the degree of role conflict and role ambiguity being experienced by the subject.

Finally, personality variables of locus of control and anxiety were measured. Locus of control was assessed through use of Rotter's **Internal/External Locus of Control Scale**. Anxiety was measured through use of the **State Trait Anxiety Inventory** which was developed by Spielberger. This
scale gave measures of both state and trait anxiety. All of these instruments can be found in the Appendix.

The data was recorded on IBM key punch cards and subject to analysis. Two computer programs were utilized in this analysis. These were the Statistical Program for the Social Sciences and the Statistical Analysis System. Explanation of specific statistical operations can be found in Chapter Three.

SUMMARY OF FINDINGS

Run related stressors were identified in two categories: type of call and type of situation. These were ranked in descending order of importance. The four most significant stressors in each category were:

**TYPE OF CALL**

1. Infant death.
2. Child abuse.

**SITUATIONS**

1. Being confronted with physical danger.
2. Using inadequate equipment and material.
3. Administering care to a fellow firefighter.
A consistent group of variables was found to exist among the subjects under study. Recall that it was assumed that State and Trait Anxiety were symptomatic of stress levels within the individual. Ten variables were hypothesized to have some effect on these two types of anxiety. Through the means of multiple regression, it was found that the type of call and the level of job satisfaction were the best group of variables in explaining variance in both State and Trait Anxiety. Four factors underlying the major variables were identified as follows:

1. Intrapersonal Stress.
2. Professional-Personel Experience.
3. Organizational Stress
4. Response Stress.

Stress levels as measured by the State Trait Anxiety Inventory revealed that 15.6% of the group displayed symptoms of high levels of stress as measured by the A-Trait Scale. Sixteen point nine percent of the group displayed symptoms of high levels of stress as measured by the A-State Scale. High levels of externality as measured by the Internal/External Locus of Control Scale were displayed by 14.3% of the sample. The relationship between this variable and the anxiety variables was examined. It was determined that while a relationship existed between these variables, it was very weak.
The major stressful events experienced on a call were very similar to those identified by Cox in his study of the Salt Lake City Paramedics. One can conclude from this finding that a stable set of situations exist that is viewed as stressful to paramedics regardless of their department affiliation. It is important to note that the four most stressful types of calls are of the type that are not experienced on a daily basis. Further, they are of the type that receive little attention in either paramedic or EMT-A training. Finally, the two most stressful situations encountered by the paramedics are situations over which they have little control. The remaining two situations tend to be emotion laden and this fact probably accounts for the stress they produce.

It would appear that a combination of response related stress and organizational stress contributes to anxiety within the paramedics under study. This confirms the "double-barrel" stress effect noted in the literature review regarding health professionals. Not only are these men confronted with the usual organizational stressors but they also must contend with stress resulting from the nature of their job.

In examining levels of stress, one could initially surmise that the majority of the subjects were reporting high or moderate levels of stress. However, high levels of stress were not reported by substantial numbers of the
population. A partial explanation for this rests in the level of felt control within this group. Recall that these men displayed a rather good level of inner locus of control. As was noted by Kobasa, the individual who has a greater sense of control will remain healthier in the face of stress. Thus, even though their jobs are stressful, it would appear that the group under study is not reacting to the stress to any great degree. Another factor to be considered here is that the paramedics in question appear content with their job. It follows that with this contentment goes a certain amount of commitment to what one is doing. In conversations with the paramedics and in reviewing the question concerning what they liked about their job this sense of commitment stood out. As was noted in the literature review, people who are committed tend to display more health in the face of stress. I would submit that this is what is occurring in this instance.

Regardless of levels of anxiety, the type of stressors remain stable. Thus one could surmise that felt levels of stress are more a function of the paramedics personality rather than as a function of the environment in which they find themselves. One could hypothesize that if the reverse were true anxiety levels would be uniformly higher in the face of the stressors encountered on the job. It would appear that, as Kutash noted, (1980) stressfulness of an event is controlled by the individual's perception of his capability in the face of stress. Thus it is not
surprising that the run related stressors identified as most stressful were of the type that excessively challenge the paramedic's ability in the field.

Generally speaking, it would appear that job satisfaction is a moderator of stress within this group. As job satisfaction goes up both forms of anxiety go down and so does the corresponding stress. This fact is important in light of the current situation within the Columbus Fire Department. One question on the Personal Questionnaire requested the participant to list three things that could be changed that could make his job easier. Many of the answers to this question suggested a need for better communication with superiors. There appears to be a growing underlying frustration with the paramedics due to the fact that they feel they are being treated as second class citizens. It is not so much that they feel overloaded in their jobs. In fact most of the men seem to like the challenge in their work. Instead the frustration seems to come from the feeling that they are not listened to by their superiors. A case in point was the memo issued in January, 1982 which restructured house assignments and training requirements. The consensus of the paramedics was that this decision was made without warning and without consideration of the impact in terms of coverage. The administration contends that much thought was given to the change and that the change was instituted to benefit the paramedics. It is difficult at this point
to determine what the ultimate impact of this change will be. However, it serves to illustrate the widening gap that is developing between the paramedics and the administration. One paramedic related to me that before the changes most of the men seemed fairly happy with their jobs and that turnover was very minimal. He suggested that now many men were considering transferring back to engines or ladder companies because of the added hassles created by this change. Again, it is difficult to determine at this point the accuracy of this statement, but it is representative of the frustration felt by the paramedics in this study.

Other concerns center around making unnecessary calls and lack of advancement within the paramedic corps. Many of the men report that dispatchers often send them on unnecessary calls. This is particularly true of the medic units. In one case it has been estimated that eighty percent of the calls made by a medic unit were calls that could have been handled by a squad. The paramedics feel that this is a result of poor training in regards to the dispatchers. A number of them suggest on their answers that if the dispatchers knew what questions to ask a caller unnecessary responses could be reduced substantially. According to some of the men I talked with, a training proposal has been suggested to the administration but has not been acted on to date.
Lack of advancement and undermanning also are issue mentioned by the men who took part in the study. The paramedics have only six lieutenants in their number. This is a significantly smaller number of officer positions than in the ranks of the firefighter corps. As a result, advancement is slow and often men must transfer back to engine or ladder companies to gain promotion. Further, the paramedic unit as a whole is undermanned. Thus if in-service training is going on or if a large number of men are off sick some extensive temporary transfers occur. This causes a fair degree of frustration on the part of the men.

As can be seen, it appears that the paramedics as a whole in this study are becoming more burned up rather than "burned out". The question remains as to how long this frustration can be allowed to grow before work efficiency drops and stress becomes a major problem.

To avoid the above problem, there is a need to develop better communication between management and the paramedics. Such a dialogue would serve to reduce levels of frustration now being felt by the paramedic corps as a whole. Also, it would serve to reinforce the fact that the men have administrative support in their efforts to provide life-saving care to the public.


RECOMMENDATIONS FOR FUTURE RESEARCH

1. No research has been done in which stress in nonprofessional life has been considered as an overall component of paramedic stress. "Life" stress and job stress interaction has been suggested by a number of researchers. In this study some inclination of this interaction was seen through changing marital status.

2. There is a need to do more research in the area of organizational stress within paramedics. This was attempted in this study but results should be approached cautiously due to the poor reliability of the Environmental Stress Scale with this population. Future researchers should consider utilizing another instrument or, better yet, developing a scale that relates directly to the paramedic population.

3. Research on specific stress reduction techniques with this type of population is needed. While stress levels appear low in the study sample, literature suggests that stress is a major problem with paramedics in
general. To date, no one has examined the effects of stress reduction techniques with paramedics.

4. Parallel research on firefighters should be considered to determine if there are similar stressors inherent in their job.

5. There is a need to generally expand descriptive data on this population because of the newness of the profession. This study represents one of the few attempts to identify stress factors in paramedics. Given their importance within the chain of emergency health care within this country it is most important to gain a better understanding of the factors which come to bear on their efficiency in the field.

6. Few studies have been done wherein the relationship of physiological factors which have been identified as stress related and perceived stress has been examined. Currently, studies in this area are being conducted at The Ohio State University in conjunction with Riverside Hospital in Columbus, Ohio. This work is being completed by Tosi, Ruddy and Lewis. Factors related to hypertension are being examined to determine their relationship to stressful
life events. Such work would be most beneficial to paramedics due to the amount of physical and emotional stress in their work.
BIBLIOGRAPHY


Dynes, R.R. Organized Behavior in Disasters. Columbus, Ohio: Disaster Research Center, The Ohio State University, 1974.


CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child's participation in) a study entitled ____________________________

________________________________________________________

(Investigator/Project Director or his/her authorized representative)
has explained the purpose of the study and procedures to be followed. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child). The information obtained from me (my child) will remain confidential and anonymous unless I specifically agree otherwise.

Finally, I acknowledge that I have read and fully understand the consent form. I have signed it freely and voluntarily and understand a copy is available upon request.

Date: ________________________________ Signed: ________________________________ (Participant)

________________________________________________________

(Investigator/Project Director or Authorized Representative) (Person Authorized to Consent for Participant - If Required)

OSU Human Subject Review Committee has determined that the research poses no risk to participants.
This is to introduce Dr. John Mason of Ohio State University. He will be visiting your station to give a series of tests to EMS Personnel in the near future.

The tests will take approximately 1½ hours and the men do not need to be taken out of service.

Your cooperation is greatly appreciated. If you have any questions, please advise or call the EMS Office at extension 457.

Respectfully,

P. G. Cronin
P. G. Cronin, Battalion Chief
Emergency Medical Services

PGC/cic
Dear Paramedic,

I am a doctoral student at the Ohio State University. I am also an EMT-A Instructor and a volunteer firefighter at Clinton Township. In cooperation with your department I am conducting a study of paramedics in this community. I would appreciate your help in carrying out this task.

Beginning January 11, 1982, I will be visiting your station houses to administer a questionnaire. This questionnaire will take about one hour of your time to complete. It is designed to investigate and identify the sources of stress within your job and how it affects the individual. Your participation is completely voluntary and you will not be penalized in any manner for refusing to participate. All information will be kept in strict confidence. Further, no names will be used and your answers will not be revealed to anyone. The questionnaire has been number coded so that I may give you follow-up information on an individual basis if you so request.

Along with providing you with confidential review of your personal instrument I will make all information gathered during the study available to you and the department. Further, in conjunction with this study, I will be gathering similar data from firefighters within your department. This data will also be made available to you.

This study is concerned with the problems that you face, your feelings about your work and the effects of your work on your health and well being. It is my hope that the recommendations generated by this study will be significant in facilitating positive changes in your working environment.

Thank you in advance for your cooperation.

Yours truly,

John M. Mason, Doctoral Student
Ohio State University
APPENDIX D
PERSONAL QUESTIONNAIRE

1. AGE: _______ SEX: _______

2. How long have you been a member of the Columbus Fire Department? __________.

3. How long were you a firefighter before entering paramedic training? __________.

4. How long were you an EMT-A before entering paramedic training? __________.

5. If you had it to do over again, would you choose to become a paramedic? YES: _____ NO: _____.

6. In the past year did you have any vehicle accidents while on duty? YES: _____ NO: _____.

7. In the past year how much sick time have you taken? 

8. Of this time, was any of it taken as a result of on the job injury? YES: _____ NO: _____.
   If yes how many days? __________.

9. In terms of overall personal safety, how would you rate your paramedic duties as compared to that of a firefighter?
   SAFER: ______ SAME: ______
   NOT AS SAFE: ______ MUCH MORE DANGEROUS: ______

10. In terms of overall stress how would you rate your duties as compared to that of a firefighter?
    LESS STRESSFUL: ______ EQUAL IN STRESS: ______
    MORE STRESSFUL: ______

11. What was your marital status when you became a paramedic? __________.

12. If this status has changed since then please note the change __________.

13. Would you say that your job has contributed to this change? YES: _____ NO: _____.
14. Think about your health in general: Rate your present health by checking one of the following categories:

VERY BAD:___ MODERATELY BAD:___ SLIGHTLY BAD:___
FAIR:___ GOOD:___ EXCELLENT:___

15. How does your job affect your health?

NOT AT ALL:___
IT HAS A POSITIVE EFFECT ON IT:___
IT HAS AN ADVERSE EFFECT ON IT:___

16. How much of the time do you experience the following feelings while on the job? Please rate them as follows:

1 - never 2 - seldom 3 - most of the time 4 - always

____NERVOUS  ____SAD  ____ANGRY  ____DEPRESSED
____CALM  ____CHEERFUL  ____EXCITED  ____EXHAUSTED

17. List three things that could be changed that would make your job easier:

1. _______________________________________________
2. _______________________________________________
3. _______________________________________________

18. List three things that you like about your job:

1. _______________________________________________
2. _______________________________________________
3. _______________________________________________

19. What type of unit are you assigned to? MEDIC SQUAD RESCUE
### STRESS-TYPE OF CALL

Below you will find a list of typical emergencies that you might encounter on a response. Please indicate how stressful each is to you by using the following code:

1 - NO STRESS  
2 - VERY LITTLE STRESS  
3 - MODERATELY STRESSFUL  
4 - QUITE STRESSFUL  
5 - INTENSE STRESS

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<td>Mentally disturbed individual.</td>
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<td>Extrication of vehicular accident victims.</td>
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<td>6</td>
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<td>8</td>
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<td></td>
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<td>Suicide attempt.</td>
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<td>Child abuse.</td>
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<td>12</td>
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<td>Treatment of elderly patient.</td>
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<td>Shooting or stabbing victim.</td>
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<td>14</td>
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<td>Medical emergencies.</td>
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<td>Handling/viewing mutilated bodies.</td>
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<td>16</td>
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<td>False alarms/unnecessary calls.</td>
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<td>18</td>
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<td>Multiple trauma victims.</td>
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<td>Child birth (delivery with complications).</td>
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<td>Poisoning.</td>
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<td>Severe bleeding.</td>
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<td>Abusive patient.</td>
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JH:21A/67
RESPONSE STRESS SCALE

Below you will find a list of situations or characteristics encountered on a response. Please indicate how stressful each is to you by utilizing the following code:

1 - NO STRESS  2 - VERY LITTLE STRESS  3 - MODERATELY STRESSFUL
4 - QUITE STRESSFUL  5 - INTENSE STRESS

1. 1 2 3 4 5 The type of emergency to which we are responding.
2. 1 2 3 4 5 The possibility of having an accident while responding to a call.
3. 1 2 3 4 5 Being confronted with a situation in which we are in physical danger.
4. 1 2 3 4 5 Administering care to a fellow firefighter.
5. 1 2 3 4 5 Using inadequate equipment or materials.
6. 1 2 3 4 5 Making field decisions based on a written protocol.
7. 1 2 3 4 5 Making field decisions without direct communication with the hospital.
8. 1 2 3 4 5 Making transport decisions in a situation which does not appear to be life threatening.
9. 1 2 3 4 5 Being officer in charge of the call.
10. 1 2 3 4 5 The physical demands encountered during a response.
11. 1 2 3 4 5 The emotional demands encountered during a response.
12. 1 2 3 4 5 Taking responsibility for human life.
13. 1 2 3 4 5 Relationships with emergency room personnel.
14. 1 2 3 4 5 Relationships with fellow team members.
15. 1 2 3 4 5 The number of responses we make on a shift.
16. 1 2 3 4 5 Communications with the dispatcher.
17. 1 2 3 4 5 Not having enough "living time" in quarters.
18. 1 2 3 4 5 Answering unnecessary calls.
19. 1 2 3 4 5 Lack of support from superiors for decisions made in the field.
ENVIRONMENTAL STRESS SCALE

Please circle the response that best relates to you.

1. In general, how much influence, or say, do you feel you have in what goes on in your job?
   VERY LITTLE  LITTLE  MODERATE  MUCH  VERY MUCH

2. To what degree do you feel you can influence the decision of your immediate superior regarding things over which you are concerned?
   VERY LITTLE  LITTLE  MODERATE  MUCH  VERY MUCH

3. How frequently does your immediate superior ask your opinion when a problem comes up which involves your work?
   VERY LITTLE  LITTLE  MODERATE  MUCH  VERY MUCH

4. If you have a suggestion for improving a job or changing an operation in some way, how easy is it for you to get your ideas across to your immediate superior?
   VERY DIFFICULT  DIFFICULT  NOT EASY  EASY  VERY EASY

5. How well do you like your work?
   VERY LITTLE  LITTLE  SOMewhat  MUCH  VERY MUCH

6. How much chance does your job give you to do the things you like to do?
   VERY LITTLE  LITTLE  MODERATE  MUCH  VERY MUCH

7. How good is your immediate superior in dealing with people?
   VERY POOR  POOR  ACCEPTABLE  GOOD  VERY GOOD

8. How likely is it that a major problem, which you cannot now foresee, will effect your job in the next year or so?
   HIGHLY UNLIKELY  VERY UNLIKELY  UNLIKELY  LIKELY  VERY LIKELY

9. How likely is it that your superior officer will evaluate your performance significantly lower than you think it should be rated?
   HIGHLY UNLIKELY  VERY UNLIKELY  UNLIKELY  LIKELY  VERY LIKELY
16. 1 2 3 4 5 I have just the right amount of work to do.

17. 1 2 3 4 5 I work with two or more groups who operate quite differently.

18. 1 2 3 4 5 I know exactly what is expected of me.

19. 1 2 3 4 5 I receive incompatible requests from two or more people.

20. 1 2 3 4 5 I am uncertain as to how my job is linked to other jobs.

21. 1 2 3 4 5 I do things that are apt to be accepted by one person and not accepted by others.

22. 1 2 3 4 5 I am told how well I am doing my job.

23. 1 2 3 4 5 I receive an assignment without adequate resources and materials to execute it.

24. 1 2 3 4 5 Explanation is clear of what has to be done.

25. 1 2 3 4 5 I work on unnecessary things.

26. 1 2 3 4 5 I have to work under vague directives or orders.

27. 1 2 3 4 5 I perform work that suits my values.

28. 1 2 3 4 5 I do not know if my work will be acceptable to my superior officer.
APPENDIX F

ROLE CONFLICT/ AMBIGUITY SCALE

Please answer the following questions according to the following scale:
1-STRONGLY DISAGREE  2-SLIGHTLY DISAGREE  3-AGREE  4-SLIGHTLY AGREE  5-STRONGLY AGREE

1. 1 2 3 4 5 I have enough time to complete my work.
2. 1 2 3 4 5 I feel certain about how much authority I have.
3. 1 2 3 4 5 I perform tasks that are too easy or boring.
4. 1 2 3 4 5 Clear, planned goals and objectives exist for my job.
5. 1 2 3 4 5 I have to do things that should be done differently.
6. 1 2 3 4 5 There is a lack of policies and guidelines to help me.
7. 1 2 3 4 5 I am able to act the same regardless of the group I am with.
8. 1 2 3 4 5 I am corrected or rewarded when I really don't expect it.
9. 1 2 3 4 5 I work under incompatible policies and guidelines.
10. 1 2 3 4 5 I know that I have divided my time properly on the job.
11. 1 2 3 4 5 I receive an assignment without manpower to complete it.
12. 1 2 3 4 5 I know what my responsibilities are.
13. 1 2 3 4 5 I have to 'buck a rule or policy in order to carry out an assignment.
14. 1 2 3 4 5 I have to "feel my way" in performing my duties.
15. 1 2 3 4 5 I receive assignments that are within my training and capability.
16. 1 2 3 4 5 I feel certain how I will be evaluated for a raise or promotion.
10. If the performance of your group drops significantly in the next year, how likely is it that you will be fired, demoted or transferred?
HIGHLY UNLIKELY  VERY LIKELY  UNLIKELY  LIKELY  VERY LIKELY

11. To what extent do you think that the chief holds the "loss of your job" over your head as the reason for working hard and improving your performance?
VERY LITTLE  LITTLE  MODERATELY  MUCH  VERY MUCH
APPENDIX G

Below you will find groups of statements relating to your beliefs. Please circle the letter of the statement in each group which relates most closely to you.

1. a. Children get into trouble because their parents punish them too much.
    b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
    b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
    b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.
    b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
    b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.
    b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.
    b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
    b. It is one's experiences in life which determine what one is like.

9. a. I have often found that what is going to happen will happen.
    b. Trusting to fate has never turned out as well for me as making decision to take a definite course of action.
10.a. In the case of the well prepared student there is rarely ifever such a thing as an unfair test.
   b. Many times exam questions tend to be so unrelated to coursework that studying is really useless.

11.a. Becoming successful is a matter of hard work, luck has little or nothing to do with it.
   b. Getting a good job depends mainly on being in the right place at the right time.

12.a. The average citizen can have an influence in government decisions.
   b. This world is run by the few people in power, and there is not much the little guy can do about it.

13.a. When I make plans, I am almost certain that I can make them work.
   b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14.a. There are certain people who are just no good.
   b. There is some good in everybody.

15.a. In my case getting what I want has little or nothing to do with luck.
   b. Many times we might just as well decide what to do by flipping a coin.

16.a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
   b. Getting people to do the right things depends upon ability, luck has little to do with it.

17.a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
   b. By taking an active part in political and social affairs the people can control world events.

18.a. Most people don't realize the extent to which our lives are controlled by accidental happenings.
   b. There is really no such thing as "luck".
19.a. One should always be willing to admit mistakes.
   b. It is usually best to cover up one's mistakes.

20.a. It is hard to know whether or not a person really likes you.
   b. How many friends you have depends on how nice a person you are.

21.a. In the long run the bad things that happen to us are balanced by the good ones.
   b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22.a. With enough effort we can wipe out political corruption.
   b. It is difficult for people to have much control over the things politicians do in office.

23.a. Sometimes I can't understand how teachers arrive at the grades they give.
   b. There is a direct connection between how hard I study and the grades I get.

24.a. A good leader expects people to decide for themselves what they should do.
   b. A good leader makes it clear to everybody what their jobs are.

25.a. Many times I feel that I have little influence over the things that happen to me.
   b. It is impossible for me to believe that chance or luck plays an important role in my life.

26.a. People are lonely because they don't try to be friendly.
   b. There's not much use in trying too hard to please people, if they like you, they like you.

27.a. There is too much emphasis on athletics in high school.
   b. Team sports are an excellent way to build character.

28.a. What happens to me is my own doing.
   b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
   b. In the long run the people are responsible for bad government on a national as well as a local level.
SELF-EVALUATION QUESTIONNAIRE
Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME ___________________________ DATE __________

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

1. I feel calm ................................................................. © © © ©
2. I feel secure ........................................................................................................ © © © ©
3. I am tense ........................................................................................................... © © © ©
4. I am regretful .................................................................................................. © © © ©
5. I feel at ease ................................................................................................. © © © ©
6. I feel upset ................................................................................................. © © © ©
7. I am presently worrying over possible misfortunes ................................ © © © ©
8. I feel rested ................................................................................................. © © © ©
9. I feel anxious ................................................................................................. © © © ©
10. I feel comfortable ....................................................................................... © © © ©
11. I feel self-confident ..................................................................................... © © © ©
12. I feel nervous ................................................................................................. © © © ©
13. I am jittery ........................................................................................................ © © © ©
14. I feel "high strung" .......................................................................................... © © © ©
15. I am relaxed ................................................................................................... © © © ©
16. I feel content ................................................................................................. © © © ©
17. I am worried ................................................................................................... © © © ©
18. I feel over-excited and "rattled" ...................................................................... © © © ©
19. I feel joyful ..................................................................................................... © © © ©
20. I feel pleasant .................................................................................................. © © © ©
SELF-EVALUATION QUESTIONNAIRE
STAI FORM X-2

NAME ____________________________ DATE ____________

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

21. I feel pleasant ................................................................. © © © ©
22. I tire quickly ................................................................. © © © ©
23. I feel like crying ............................................................. © © © ©
24. I wish I could be as happy as others seem to be ................. © © © ©
25. I am losing out on things because I can't make up my mind soon enough ... © © © ©
26. I feel rested ........................................................................ © © © ©
27. I am "calm, cool, and collected" ........................................... © © © ©
28. I feel that difficulties are piling up so that I cannot overcome them ... © © © ©
29. I worry too much over something that really doesn't matter .......... © © © ©
30. I am happy ........................................................................... © © © ©
31. I am inclined to take things hard ........................................... © © © ©
32. I lack self-confidence ............................................................ © © © ©
33. I feel secure ........................................................................... © © © ©
34. I try to avoid facing a crisis or difficulty ................................. © © © ©
35. I feel blue ............................................................................. © © © ©
36. I am content ........................................................................... © © © ©
37. Some unimportant thought runs through my mind and bothers me .... © © © ©
38. I take disappointments so keenly that I can't put them out of my mind ... © © © ©
39. I am a steady person ............................................................. © © © ©
40. I get in a state of tension or turmoil as I think over my recent concerns and interests ................................................................. © © © ©
## APPENDIX I

### PARAMEDIC CERTIFICATION COURSE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>8305 Paramedic I</td>
<td>Role of the Paramedic</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Human Systems and Patient Assessment</td>
<td>10 hrs.</td>
</tr>
<tr>
<td></td>
<td>Shock and Fluid Therapy</td>
<td>12 hrs.</td>
</tr>
<tr>
<td></td>
<td>General Pharmacology</td>
<td>9 hrs.</td>
</tr>
<tr>
<td></td>
<td>Respiratory System</td>
<td>27 hrs.</td>
</tr>
<tr>
<td></td>
<td>Communications and Telemetry</td>
<td>4 hrs.</td>
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<tr>
<td></td>
<td></td>
<td>65 hrs.</td>
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</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>8313 Paramedic I Hospital Clinical</td>
<td>Five selected areas in local hospitals</td>
<td>66 hrs.</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>8306 Paramedic II</td>
<td>Cardiovascular Emergencies</td>
<td>48 hrs.</td>
</tr>
<tr>
<td></td>
<td>Medical Emergencies</td>
<td>12 hrs.</td>
</tr>
<tr>
<td></td>
<td>Pediatrics</td>
<td>8 hrs.</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>8314 Paramedic II Hospital Clinical</td>
<td>Five selected areas in local hospitals</td>
<td>66 hrs.</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>8361 Paramedic II Vehicle Clinical</td>
<td>Scheduled vehicle riding time</td>
<td>50 hrs.</td>
</tr>
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