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## **A Study of Stress in the Workplace in the 1990s**

Reva Carol Mays

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COMMITTEE IN CHARGE OF CANDIDACY  
A STUDY OF STRESS IN THE WORKPLACE IN THE 1990'S

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B.S.

A Thesis Presented to the Faculty of the Graduate School  
of Lindenwood College in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Art

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## ABSTRACT

A STUDY OF STRESS IN THE WORKPLACE IN THE 1970'S

This study was conducted to determine if there was a significant difference in the intensity and frequency of organizational stress and job risk stress perceived between salaried, white-collar (N=37) employees and skilled blue-collar, union employees (N=35). 59 of the subjects were male and 13 were female.

Ms. Carol Mays  
P. 3

The respondents completed two self-administered questionnaires. One was a work stress instrument, and the other was a demographic data sheet. The stress instrument contained 40 items, with scoring based on a 5-point Likert-type scale, that measured intensity and frequency of stress. The demographic data sheet contained 13 items.

Major findings of the research concluded that there was a significant difference in the average organizational intensity and frequency stress scores of white and blue-collar subjects. There was no difference in the average job risk intensity and frequency stress scores of white and blue-collar subjects.

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Special thanks go to my daughter, Lisa Lynn Hays-Buchler, for her continuing encouragement and support throughout the many years that I attended college. This project and many others could not have been completed. Thank you, Lisa.

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## Chapter 1

### Introduction

#### Evidence of a Problem

The effects of occupational stress on employees are varied. Often when hearing that someone is experiencing job stress, the first thing that may come to mind are thoughts of the psychological pain experienced. Both psychological and physical stress-related health problems are widespread in the American population, and work is clearly a major contributing factor (Donovan, 1987).

Donovan (1987) described numerous emotional and physical symptoms and effects of organizational stress. Emotional problems which Donovan cited included depression, anxiety, tension and frustration. These problems can then evolve into attitudes of job dissatisfaction and negative feelings about work. Behaviors associated with illness such as overeating, smoking, and alcohol and drug abuse, are frequently used coping behaviors which are linked to job stress (Donovan, 1987; Trice, 1992). Donovan also concluded that there are well-established links between work

stress and certain diseases such as ulcers, coronary heart disease and diabetes.

Weber's (1991) study of work stress also addressed the psychological and physical symptoms of job stress. He recognized that feelings of anger, anxiety, depression, frustration, overall job dissatisfaction and turnover intent were common psychological symptoms of job stress. In a study of 600 workers, Weber stated that over two-thirds of the workers reported that they often experienced three or more of these psychological symptoms of stress. The physical manifestations of job stress that Weber identified included headaches, ulcers, insomnia, hypertension, exhaustion, muscle pain dizziness and chest pains.

According to Ganster and Schaubroeck (1991) much research has shown that continuous or frequent exposures to stressors that provide little opportunity for physiological recovery are taxing on the immunological systems on which the body relies for regeneration from stress. Effects of stress are dependent on the frequency, duration and intensity of stress exposures. Most of the current literature supported the view that prolonged exposure to job

stressors often leads to deleterious effects on workers' physical and psychological health and results in a decline in organizational productivity (Carrere, Evans, Palsane & Rivas, 1991; Fox, Dwyer & Ganster, 1993; Steffy & Jones, 1988).

Organizational stress has effected a recent change in the definitions of occupational health and safety which has now expanded from an exclusive focus on hazards that affect physical health to include the mental health hazards of stressful working conditions (Cahan, 1993; Donovan, 1987). The cost of stress in the workplace to American businesses can be measured in terms of lost productivity and stress-related disability claims. It is estimated that companies lose about \$68 billion every year from lost productivity and spend an estimated 10% of their profits on stress-related disability claims (Ganster & Schaubroeck, 1991).

Evidence of the widespread recognition of stress in the work environment as a significant occupational hazard is reflected in the fact that many states now recognize emotional distress as a work-related illness and award worker's compensation benefits accordingly (LaVan, Katz & Hochwarter, 1990). Mental stress

represents the fastest growing type of workers' compensation claim in the state of California (Cahan, 1993). Mental stress injuries--anxiety reactions and other mental disorders triggered by the demands of the job --rose 700 percent in California from 1979 (1,178 claims) to 1988 (9,388 claims). In 1990, the number increased to 10,500 cases (Cahan, 1993; Weber, 1991).

This study of stress in the workplace emerged from the researcher's experience as an employee in the rapidly changing aerospace industry during a difficult and challenging post cold war transition era. During the late 1980's and early 1990's, the shrinking United States defense budget resulted in unprecedented aerospace industry workforce reductions (Phillips, 1994).

#### Shrinking Aerospace Industry

During 1991 and 1992, McDonnell Douglas Aerospace trimmed its work force by 20% (from 109,123 to 87,377 workers), consolidated its production facilities and closed three plants to reduce costs (unknown author, McDonnell Douglas Aerospace-East [MDA-E], Jan. 18, 1993). The layoff survivors (those who still retained jobs) at McDonnell Douglas Aerospace were continually plagued with announcements and rumors of future

layoffs, plant sales and closures, and restructuring plans (unknown author, MDA-E, Jan 21, 1991; Mar 1 & Mar 29, 1993).

In the post cold war global community, all defense contractors including the industry giant, McDonnell Douglas Aerospace, faced new challenges. From 1985 to 1993, overall US defense spending decreased by 30% and funding for annual weapons purchases dropped 60% (author unknown, MDA-E, May 10, 1993). Phillips (1994) reports that jobs in aerospace employment declined by 13% (from 1,040,000 to 909,000) during 1993. Another 49,000 workers were scheduled to lose their jobs by the end of 1994, bringing the total layoffs since 1989 to 471,000 employees.

#### Purpose of the Study

The primary purpose of the current research is to determine if there is a significant difference between the average perceived organizational stress levels of white-collar versus blue-collar employees. The research also investigates whether there is a significant difference between the average perceived job risk stress levels of white-collar workers as compared with blue-collar workers. Job risk stress is defined as stress which results from fear of harm to

self or others; it is not associated with workers' fear of losing their jobs. For the purpose of this study, white-collar workers are defined as subjects employed in salaried professional positions.

Blue-collar subjects are defined as union employees.

#### Research Hypotheses

Null hypotheses. There is no significant difference in the average organizational and job risk stress scores (intensity and frequency) for white-collar and blue-collar subjects.

Alternate hypotheses. There is a significant difference in the average organizational and job risk stress scores (intensity and frequency) for white-collar and blue-collar subjects.

#### Theoretical Job Stress Models

The concept of stress has undergone a significant amount of change at first became popular with the work of Selye. Ganster and Schaubroeck (1991) posit that the two most prominent theoretical models of job stress are Selye's General Adaptive Syndrome and Lazarus' transactional model. According to Ganster and Schaubroeck, these two models have exerted an influence on the general direction that recent job stress research has taken. Each of these models

## Chapter 2

### Review of the Literature

#### Definition of Occupational Stress

Much of the literature agrees that stress is a complex concept and is difficult to define precisely (LaForge & Wagenaar, 1994; Patel, 1991). However, most of the current literature refers to Selye's (1975) definition of stress.

Selye (1975) defined stress as the nonspecific response of the body to any demand made upon it. Lazarus (1991) expanded the definition of stress to include response to any event in which either environmental or internal demands, or both exceed the adaptive resources of an individual.

#### Major Theoretical Job Stress Models

The concept of stress has undergone an evolution since it first became popular with the work of Selye. Ganster and Schaubroeck (1991) purport that the two most important theoretical models of job stress are Selye's General Adaptive Syndrome and Lazarus' transactional model. According to Ganster and Schaubroeck, these two models have exerted an influence on the general direction that recent job stress research has taken. Each of these models



provides a different paradigm for approaching the problem of work-related stress.

Objective life stress (environmental). Selye's stress model is now commonly referred to as the objective life stress model (LaForge & Wagenaar, 1994). Selye's General Adaptive Syndrome paradigm views stress as originating from environmental factors. Selye (1975) concludes that all agents to which humans are exposed produce a nonspecific increase in the need to perform adaptive functions and thereby to re-establish normalcy through either fight or flight. The nonspecific demand for activity as such is the essence of stress.

Selye further made a distinction between types of stress (Leatz & Stolar, 1993) identifying two types, acute and chronic stress. Acute stress occurs when there is an immediate threat to a person's life or physical being, and the person has to respond instantaneously. (The job risk stress factor of this study investigates acute stress.)

Chronic stress occurs when a crisis situation is prolonged without any rest or recuperation time for the body. It can also occur when one crisis follows another crisis too quickly. Chronic stress is the

kind that most workers in business today are experiencing (LaForge & Wagenaar, 1994). (The organizational stress factor measured in this work stress study addresses chronic stress.)

Selye (1975) reported that both chronic and acute stress produce a definite series of reactions in the human body which consists of three phases: alarm, resistance and exhaustion. During the alarm phase, the brain and body perceive in the environment some sort of threat or a situation that requires immediate attention. Adrenaline is rapidly secreted and rushed throughout the body to prepare for action.

During the resistance phase, the body readies a particular organ or muscle group to cope with and resolve the stressful situation. If the person is able to act in some way to resolve the situation so that no threat to well-being remains, the stress ends. However, if the person is unable to alleviate the crisis, the body responds to it as a chronic stress situation, and both adrenaline and steroids begin to be secreted in large amounts. If the chronic stress situation is not resolved, eventually the body will reach the exhaustion phase. This phase results in

severe illness, manifested in numerous ways in the body, and sometimes in death (Selye, 1975).

Patel (1991) effectively summarizes Selye's stress theory. She explains that, in essence, no matter what the situation is, when the demands people perceive exceed the resources they believe they have, both body and mind are aroused and all systems are geared up either to fight the challenge or to flee from the situation to avoid harm. A certain amount of stress occurs all the time. There is no life without stress. However, when people complain about stress, they are talking of too much stress or of experiencing symptoms of stress. LaForge and Wagenaar (1994) conclude that the alarm phase may lead to organism breakdown over the long term in modern society in which dangers are characteristically psychological and chronic in nature.

Subjective life stress (psychological). While Selye's model directs the focus toward the objective features of the environment (job stressors), Lazarus's transactional model is oriented toward the individual's subjective appraisal of environmental demands (LaForge & Wagenaar, 1994). Lazarus (1991) views stress as an interactive process dependent on

the individual's psychological interpretation of the specific environment within a context. Stress depends on how an individual appraises what is happening. Stress results when perceived threat seems great and coping ability low.

Donovan (1987) reports that various coping mechanisms are employed when a disparity occurs between an individual's desired state and perceived or actual state in attempts to restore a state of equilibrium. Coping is defined as behavior that protects people from being psychologically harmed by problematic social experience. According to LaForge and Wagenaar (1994), ineffective means of coping may include reliance on food, alcohol or other drugs and risky health habits.

#### Other Stress Theories and Constructs

While Ganster and Schaubroeck (1991) concluded that both the environmental and psychological models are useful for conceptualizing work stress, they noted that neither model identifies the particular features of work that are likely to most influence the stress syndrome. Their study focused on the patterns of association between job stressors and strain. While job stressors are the events or conditions that

produce stress at work, strain refers to the response of the individual to the actual or perceived stressors (Ganster & Schaubroeck, 1991).

Job stressors. Constructs frequently described as job stressors include role ambiguity, role conflict, workload, interpersonal conflict, low participation in decision-making, lack of control, ambiguity about future job security, poor utilization of skills and abilities (Frone & McFarlin, 1989; Jackson & Schuler, 1985; Jex, Beehr & Roberts, 1992).

Similarly, the author of the test instrument that was used to conduct this study also reported that a wide range of job stressors best measure occupational stress (Barone, Caddy, Katell, Roselione & Hamilton, 1988). Those stressors included job overload, role conflict, role ambiguity, non-participation, and problems in interpersonal relationships with supervisors and others.

Job demands-control theory. According to Ganster and Schaubroeck (1991) job demands are psychological stressors, and include: requirements for working fast and hard, having a great deal to do, not having enough time, and having conflicting demands. The job control aspect consists of the worker's authority to make

decisions on the job and the variety of skills used by the worker on the job. In the job demands-control theory, strain (a stressful condition that leads to mental and physical health problems) occurs when jobs are simultaneously high in demands and low in control (Carrere, et al., 1991). Positive outcomes of motivation and learning occur when an individual occupies a job that has both a high level of psychological demands and high level of control (Fox, et al., 1993).

Person-environment fit model. Glowinski and Cooper (1986) described the basic tenet of this theory as the degree of fit between the individual and the job environment determines the strain (or stressfulness) that is experienced. Two types of fit are generally specified: (1) that between outcomes provided by the job and the needs, motives, or preferences of the individual and (2) that between the demands and requirements of the job and the skills and abilities of the worker.

Quick (1986) concluded that persons whose thinking styles are not in sync with their work responsibilities may suffer from greater stress than their peers. Similarly, Barone, et al. (1988) viewed

stress as an interactional construct involving a misfit between environmental demands and individual capabilities.

Communication and stress. Other studies have focused on the role of communication in reducing organizational stress (Ivancevich, 1990; Smeltzer, 1987) and reported that communication is an effective key to reducing organizational stress. Message behaviors involving uncertainty, perceived control, and emotion contribute to or ameliorate work stress and burnout. Smeltzer (1987) also concluded that group support and group and individual level communication variables are more closely related to work stress than organization variables.

Participation in decision-making and stress. A recent study (Miller, Zook, Lyles & Judith, 1990) focused on the types of communication between supervisors and co-workers and how communication affected job stress. This study reported that employees perceptions of participation in the decision-making process was particularly crucial in reducing role stress and increasing perceptions of satisfaction and personal accomplishment.

Another study by Donovan (1987) also identified the interaction of heavy work demands and lack of decision-making opportunities as being particularly damaging to workers.

Systems approach to stress. The contributions of poor working conditions and stressful work environments must be viewed in conjunction with the individual worker as part of a larger system that generates and maintains organizational stress (Donovan, 1987). Stressful work environments can be determinants of individual problems of workers and therefore potential areas for intervention. Donovan concluded that the current emphasis on individual and family problems deflects attention from problems existent in the workplace, thereby creating a subtle version of blaming the victim.

Stress management and coping-skills. Psychologists, management consultants, social workers and the like are providing training in stress management and reduction (Stater, 1989). Stress management training typically includes relaxation, meditation, exercise, time management, improving communication skills (Eliot, 1994). Powell and George-Warren (1994) explored the recent popular use of



biofeedback technology and claims that it is as an effective healing tool.

Typically claims are made that stress management programs have proven successful in reducing job stress (Allerton, 1993; Stater, 1989). However, Ivancevich (1990) reports that these claims have not been scientifically tested or evaluated. Donovan (1987) views the widespread implementation of stress management seminars as targeting the individual as the problem. In this process, the poor working conditions and stressful work environments which often acted as the stimulus to create the individual's stress are ignored.

According to Eliot (1994), stress-coping programs concentrate on both individual and organizational remedies. Individual stress coping emphasize such responses as modifying behavior, seeking counseling and improving physical fitness. Organizational remedies include increased emphasis on participatory decision making, management by objectives, role clarification and job redesign.

#### Studies of White and Blue-Collar Work Stress

Review of the current literature yielded no recent studies which compared the average

organizational stress levels of white-collar employees with blue-collar workers. However, Patel (1991) did summarize numerous differences typically found in stressors and work environments between white versus blue collar workers. Blue-collar workers often experience worse working conditions (more noise, odors, poor lighting and poor ventilation) than white-collar workers. Likewise, more rules and regulations are generally placed on blue-collar workers than white-collar workers. Patel noted that these differences in working conditions and work rules often contribute to a loss of dignity and pride in the blue-collar ranks and contribute towards blue-collar stress. Patel also reported that the average number of days lost through illness or accidents among unskilled manual workers was three to five times greater than among professional workers.

Work stressors differ in other ways between the two groups. Patel (1991) noted that white-collar workers often have more demands placed on their time and resources than they are able to meet and are expected to work free overtime to meet the standards set by their employers. Conversely, blue-collar workers are more likely to experience dull and boring

repetitive tasks and often fear that their jobs will be replaced by technological advances.

Patel (1991) described the four basic concerns of blue-collar workers as pay, safety at work, the quality of the work setting and the stability of the job. For white-collar workers, common concerns included working long hours without compensation, competing for promotions, fear of being fired due to office politics and mergers or takeovers of the company. However, in spite of the different concerns between the two groups, most of the current literature on organizational stress in industry tends to focus on stress management training for both blue-collar and white-collar workers (Allerton, 1993; Ivancevich, 1990; Stater, 1989).

#### Gender as a Variable in Organizational Stress

Some recent studies have focused on women's work stress and a few studies explored the differences between organizational stress for males and female employees. Piechowski (1992) explored the effects of work stress on women with multiple-roles of family, childrearing, housework and work. Negative outcomes were linked to family-role demands such as disproportionate responsibility for housework and

childrearing tasks. The study reported that work stress and job dissatisfaction are significant predictors of depression and other psychological symptoms in women.

Greenglass (1991) examined job burnout and work stress and focused on gender-related differences. The study reported that there are gender-related differences in precursors of burnout and work stress. While work sources were concluded to be the primary precursors of burnout for men, predictors of women's burnout included both work and family variables such as role conflict and marital satisfaction as well as work stress. The differential importance of work and home as stressors in men and women was attributed to the societal structure which continues to assign women, regardless of their employment status, the primary responsibility for home and family.

Long (1990) examined sex-typed traits, the work environment demands, interpersonal resources, and the importance of stressor episodes as predictors of measures of coping with work stress. The study revealed that women were more likely than men to use avoidance and problem-reappraisal coping skills, but

found no gender differences in regard to active problem-solving coping. (Long, 1990, 1992).

Another study (Baruch, 1987) concluded that work related stress has tended to focus on males and to neglect gender as a variable. Findings from studies of men were often generalized to women.

### Job Safety and Stress

A review of the literature revealed that job stress often is related to workers concerns of harm to themselves or others in the work environment. Patel (1991) reported that in the United States over 14,000 workers die annually and over 100,000 workers are permanently disabled through industrial accidents. Patel also concluded that workers increasingly fear exposure to hazardous chemicals and toxic fumes in the workplace.

In addition to accidents, workers are sometimes concerned with other physical injuries that may occur as a result of the nature of their work tasks. Rose (1995) cited numerous stressful activities and repetitive motions that lead to chronic injury. He concluded that when workers do not exceed their physical capabilities, they can work without fatigue and do their jobs better.

Similarly, Hairston (1995) reported that cumulative stress disorders, such as tendinitis, low back pain and carpal tunnel syndrome, accounted for 33% of all worker compensation costs. Hairston suggested that when setting up the workplace, facility designs and equipment should be better designed and more oriented towards preventing worker injuries.

Another study by Shimpock-Vieweg (1995) contended that although computerization has increased productivity, it has also produced a series of musculoskeletal conditions that can affect the hands, wrists, elbows, shoulders, neck and back of the computer user. The resulting conditions are known as repetitive stress injuries, cumulative trauma disorders or work-related upper limb disorders. As the use of technology in the workplace continues to increase, worker stress and safety issues will also increase unless preventative measures are implemented (Shimpock-Vieweg).

Another often overlooked safety hazard in the workplace is heat stress (Bernard, 1995). Bernard cited high temperatures and humidity, high physical work demands and the requirement to wear protective clothing as frequent causes of heat stress.

Arkin (1995) reported that a new federal guide outlines some primary causes of occupational stress and identified steps employers can and should take to prevent harmful levels of stress in their organizations. Arkin anticipated that the new guide would help claimants prove that their employers failed to follow good practice. Arkin (1995) reported that legal precedents have been established based on this new guide. Several employees recently won stress-related claims citing their employers neglect in performing their duty to protect employees from foreseeable harmful effects of work stress. Arkin suggested that companies should develop appraisal systems to review workloads, establish reasonable deadlines and make sure that employees have enough free time for outside pursuits.

Weber's study (1991) reported that many American businesses jeopardize worker's safety and health by demanding extensive overtime from workers. Excessive work leads to fatigue and often results in an increase of worker injuries. Weber cited employers' objectives of cost reduction (such as savings for payment of fringe benefits which is on a per-person basis) as the rationale for demanding more hours of work from the

employees who are already on the payroll. Weber (1991) suggested that legislation should be passed that would require employers to offer compensated time-off in lieu of overtime pay to hourly workers. Likewise, he suggested that employers should be required to set standard work-weeks for salaried employees who often work long hours of free time.

An area that is rapidly emerging as a growing concern for workers safety is physical assault and harassment at work. A study conducted by Thompson (1994) stated that more than two million Americans were physically attacked in the workplace during the twelve months preceding July of 1993, and another six million were physically threatened. An additional sixteen million were harassed by having someone create a hostile work environment through words, actions or physical contact that did not result in physical harm. Thompson's study found both a cause-and-effect relationship existed between job stress and violence and harassment.

#### Summary of the Literature Review

While the literature identified many job stress models and constructs (Ganster & Schaubroeck, 1991; Glowinski & Cooper, 1986; Jackson & Schuler,



1985), objective life stress and subjective life stress models were most frequently cited (Ganster & Schaubroeck, 1991; LaForge & Wagenaar, 1994; Leatz & Stolar, 1993; Patel, 1991; Selye, 1975).

The literature reviewed the job stress experienced by both white-collar and blue-collar workers and discussed the job stressors that often differ between the two groups (Patel, 1991). Gender as a variable was also explored in the literature and the gender-related differences in precursors of burnout, work stress and coping skills (Greenglass, 1991; Long, 1990). The literature review also examined job stress that is related to safety concerns in the workplace (Hairston, 1995; Patel, 1991; Rose, 1995).

## Chapter 3

### Methodology

#### Purpose

The purpose of this study was to investigate whether there was a significant difference in the average organizational and job risk stress scores between white-collar and blue-collar workers. Subjects rated both the intensity and frequency that they perceived stress for each of the test items. The hypotheses were that there was no significant difference in the average:

- (1) organizational stress scores of white-collar and blue-collar workers
- (2) job risk stress scores of white-collar and blue-collar workers (Note that throughout the current research, job risk stress is defined as stress which results from fear of harm to self or others.)

McDonnell Douglas Aerospace's recent series of workforce reductions and anticipated future layoffs was recognized as a potential factor that might contribute towards the organizational stress reported by employees in this study. This research identifies (1) the number of employees who had previously been

laid off, (2) number of employees who thought they might be laid off within the next three years and (3) the frequency that the subjects worried about future layoff.

### Sample

The sample consisted of 72 employees at McDonnell Douglas Aerospace (MDA) in St. Louis, Missouri. The sample included 37 salaried (white-collar) workers and 35 union (blue-collar) workers.

Those who distributed the test instrument to white-collar subjects reported that they had made distribution to subjects (N=37) with a variety of job titles, which included buyers, contracts and pricing administrators, financial analysts, planners, and engineers. Likewise, those who distributed the test instrument to the blue-collar subjects reported that distribution was made to subjects (N=35) with various job titles which included aircraft mechanics, electricians, aircraft production workers and quality assurance inspectors. The test instrument did not request subjects to specify their job titles. distributed, and 76 responses were received.

### Analysis of Demographic Data

Response Rate. The response rate from the

questionnaires distributed (N=100) was 76%. A total of 100 questionnaires were distributed, and 76 responses were received. 4 of the 76 subjects failed to complete questions on either the Demographic Data Sheet, the WSI, or both. Responses from those 4 subjects have been excluded from the research. The results from the research includes only responses from subjects (N=72) who completed both the Demographic Data Sheet and the WSI.

Age range of subjects. Only 9.7% of the subjects were under 30 years old (N=7), while 36.1% (N=26) were from 30 to 40 years old; 30.6% were from 41 to 50 years (N=22); and 23.6% (N=17) were 50 years or older as shown in Table 1.

Table 1

Age Range of Subjects

<b>Age Range</b>	<b># of Subjects</b>	<b>% of Subjects</b>
< 30 Years	7	9.7%
30 - 40 Years	26	36.1%
41 - 50 Years	22	30.6%
> 50 Years	17	23.6%

Ethnic origin of subjects. Most of the subjects were Caucasian (N=65), with 4 Afro-Americans, 1 Asian. Two of the subjects were of other unspecified ethnic groups. Table 2 summarizes these results:

Table 2

Ethnic Origin of Subjects

<b>Ethnic Origin</b>	<b># of Subjects</b>	<b>% of Subjects</b>
Caucasian	65	90%
Afro-American	4	6%
Asian	1	1%
Other	2	3%

Subjects' tenure at McDonnell Douglas Aerospace.

Most of the subjects were non-management, non-supervisory (N=69) employees. Only 4.2% (N=3) were in management or supervisory positions, and these three subjects were salaried male workers.

Table 3 provides a summary of the number of years of uninterrupted service the subjects had accrued at MDA and the number of years the subjects had worked in their current jobs. The number of years that the subjects had worked at the company was about the same for the categories of 5-10 years (N=22), 11-20 years (N=20), and more than 20 years (N=26). Only 4 workers had been with the company for less than 5 years.

More diversity was reported in the number of years that the subjects had worked in their current jobs. 13.8% of the subjects (N=10) reported that they had worked in their current jobs for less than five years and another 13.8% reported they had worked in their current jobs for twenty years or longer. Almost half (47.2%, N=34) had worked in their current jobs from 5 to 10 years, while 25% (N=18) reported they had worked in their current jobs from 11 to 20 years.

**Table 3**  
**Subjects Tenure at McDonnell Douglas Aerospace**

UNINTERRUPTED YEARS OF SERVICE AND YEARS EMPLOYED IN CURRENT JOB AT MDA

NUMBER OF YEARS	UNINTERRUPTED YEARS OF SERVICE AT MDA			YEARS WORKED AT CURRENT JOB		
	Males	Females	Total	Males	Females	Total
< 5	4	0	4	9	1	10
5 - 10	17	5	22	25	9	34
11 - 20	14	6	20	15	3	18
> 20	24	2	26	10	0	10
Total	59	13	72	59	13	72

Layoff demographics. Table 4 summarizes the layoff demographics reported by the subjects. The majority of the subjects (77.8%, N=56) reported they had not been previously laid off. None of the female subjects (N=13) had been previously laid off, and 72.9% (N=43) of the male subjects had not been previously laid off at MDA. Approximately one-third (N=23) of the subjects thought they might be laid off within the next one to three years. While only 27.1% of the male subjects (N=16) thought they might be laid off within one to three years, over 50% (N=7) of the female subjects thought they might be laid off within the same period.

More than half of the subjects (55.6%, N=40) reported that they sometimes worried about being laid off in the future. Another 15.3% (N=11) reported they often worry about being laid off, and 5.6% (N=4) reported that they always worry about being laid off. The remaining 23.6% of the subjects (N=17) reported that they never worry about being laid off from their jobs. Table 4 summarizes the data by gender and by salaried (white-collar) and union (blue-collar) categories.



**Table 4**

**Layoff Demographics (n=72)**

Category	PREVIOUSLY LAID-OFF AT MDA		SUBJECTS THINK THEY MIGHT BE LAID OFF WITHIN 1-3 YRS		FREQUENCY SUBJECTS WORRIED ABOUT BEING LAID OFF			
	YES	NO	YES	NO	NEVER	SOMETIMES	OFTEN	ALWAYS
<b><u>Males</u></b>								
Salaried (1)	2	25	13	14	4	15	7	1
Union	14	18	3	28	11	18	1	2
<b>Number of Males</b>	<b>16</b>	<b>43</b>	<b>16</b>	<b>42</b>	<b>15</b>	<b>33</b>	<b>8</b>	<b>3</b>
<b>% of Males</b>	<b>27.1%</b>	<b>72.9%</b>	<b>27.1%</b>	<b>71.2%</b>	<b>25.4%</b>	<b>55.9%</b>	<b>13.6%</b>	<b>5.1%</b>
<b><u>Females (N)</u></b>								
Salaried (1)	0	9	6	3	0	5	3	1
Union	0	4	1	3	2	2	0	0
<b># of Females</b>	<b>0</b>	<b>13</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>1</b>
<b>% of Females</b>	<b>0.0%</b>	<b>100.0%</b>	<b>53.8%</b>	<b>46.2%</b>	<b>15.4%</b>	<b>53.8%</b>	<b>23.1%</b>	<b>7.7%</b>
Salaried	2	34	19	17	4	20	10	2
Union	14	22	4	31	13	20	1	2
<b># SUBJECTS</b>	<b>16</b>	<b>56</b>	<b>23</b>	<b>48</b>	<b>17</b>	<b>40</b>	<b>11</b>	<b>4</b>
<b>% SUBJECTS</b>	<b>22.2%</b>	<b>77.8%</b>	<b>31.9%</b>	<b>66.7%</b>	<b>23.6%</b>	<b>55.6%</b>	<b>15.3%</b>	<b>5.6%</b>

Note: (1) Only 3 of the male salaried subjects were in supervisory/management positions.

None of the female salaried subjects worked in supervisory/management positions.

One of the union male subjects did not answer the question "Do you think you might be laid-off from MDA within the next one to three years."

Marital status and educational level of subjects.

Most of the subjects were married (N=62), while 5 were divorced or separated, 2 were widowed, and 3 had never been married. Only 6 of the subjects reported that they had no children, while 38 had 1 to 2 children, and 28 had 3 or more children. The marital status, gender and educational level of the subjects is summarized in Table 5.

The highest level of education for 65% of the subjects (N=46) was a high school diploma. 15% (N=11) of the subjects had an Associate degree; 10% (N=7) had Bachelor degrees; and 10% (N=8) had Master degrees. The number of blue-collar (N=35) and white-collar (N=37) subjects was about equally represented. But only four of the blue-collar workers were female as compared to 31 male blue-collar subjects. There were also fewer female white-collar subjects (N=9) as compared with male white-collar subjects (N=28). Almost 82% of the subjects in the research were male (N=59), and approximately 18% were female (N=13).

Table 5

**Marital Status & Educational Level, by Gender**

GENDER	MARITAL STATUS					EDUCATIONAL LEVEL				
	MARRIED	SINGLE	DIVORCED	WIDOWED	TOTAL	HIGH SCHOOL	ASSOCIATE DEGREE	BACHELORS DEGREE	MASTERS DEGREE	Total
<b>MALE:</b>										
Salaried	27		1		28	9	5	7	7	28
Union	26	1	2	2	31	28	3			31
<b>Subtotal</b>	<b>53</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>59</b>	<b>37</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>59</b>
<b>FEMALE:</b>										
Salaried	7	1	1 *		9	6	1		1	8
Union	2		1	1	4	3	1			4
<b>Subtotal</b>	<b>9</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>13</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>12</b>
<b>Total</b>										
Salaried	34	1	2	0	37	15	6	7	8	36
Union	28	1	3	3	35	31	4	0	0	35
<b>Total</b>	<b>62</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>72</b>	<b>46</b>	<b>10</b>	<b>7</b>	<b>8</b>	<b>71</b>

\* The salaried, divorced female subject did not indicate her level of education.

Method

Test administration instructions. The Work Stress Inventory (WSI) was distributed as part of a test packet to white-collar (N=50) and blue-collar (N=50) subjects who worked at numerous MDA facilities located in St. Louis Missouri. The WSI was distributed by two white-collar employees to their white-collar co-workers, and two blue-collar employees distributed the WSI to the blue-collar subjects. The sample consisted of subjects who were located in four different sites.

The four employees who distributed the instruments were acquaintances of the researcher. All four employees were given identical instructions. They were instructed to include the following groups in their samples: (1) male and female subjects, (2) subjects of various ethnic backgrounds, and (3) subjects who had worked for the company for various lengths of time. They were also instructed that all subjects should be ensured anonymity, that names or other means of identification of the subjects were not to be included, and that the completed instruments

should be mailed directly to the researcher in the stamped, self-addressed envelopes provided.

The four employees who made the distribution of the instruments were located in separate buildings within the MDA complex in St. Louis. The sample selection does not meet the criteria for a random sample. It was a sample of convenience.

Instrument packets. Prior to distribution of the instrument to the subjects, each WSI was supplemented by additional data which was clipped together as a test packet. Each packet contained the following data and was presented in the order stated: (1) a General Information and Instructions sheet, (2) a Demographic Data Sheet, (3) a WSI instrument, (4) a stamped, self-addressed envelope for return of the completed packet to the researcher.

The General Information and Instructions cover sheet explained the purpose of the study and requested that subjects identities remain anonymous. It directed subjects to mark only one answer for each item on the Demographic Data Sheet. Subjects were told to read the separate instructions for the WSI prior to completion of that instrument. A copy of the

General Information and Instructions which was distributed to the subjects is provided in Appendix A.

Instructions for completion of the Demographic Data Sheet were essentially self-explanatory. The Demographic Data Sheet consisted of thirteen items, with multiple-choice type answers from which the subjects selected their answers. The items provided data which described each subjects' job classification, tenure, gender, age, ethnic origin, education, history and expectations regarding being laid off. Appendix B provides both a complete list of the Demographic Data Sheet questions and the multiple-choice answers that the subjects were asked to select from for each Demographic Data Sheet item.

Complete instructions for the WSI were stated on the first page of the instrument (Barone, 1982). First Barone defined the meaning of 'stress' as "feelings of emotional strain, pressure, discomfort, uneasiness, and/or tension". Then subjects were asked to evaluate their current job and rate the amount (intensity) and how often (frequency) stress was experienced by circling the appropriate Likert scale answers. The Likert scale for the stress intensity ranged from 0 to 4, with 0 representing the minimum

and 4 the maximum. An identical scale was used for the subjects to indicate the frequency that an event occurred and whether the event was stressful or not.

### Instrument

Workplace Stress Instrument (WSI). The Workplace Stress Inventory (WSI) was used to examine the differences between stress in white-collar and blue-collar workers at MDA. A copy of the WSI is provided in Appendix C.

The WSI was developed by David Barone in 1982 (Barone, et al., 1988) to measure organizational stress (OR) and job risk stress (JR). The instrument has two scales that respondents answered for each test item. One scale measures the amount (intensity) of stress associated with an event. The other scale for each test item measures the frequency that the event occurs. Therefore there are a total of 80 responses, two for each of the 40 WSI test items.

The 40-item WSI scale consists of two subsets. Each subset contains 20 items that measure organizational stress and another 20 items that measure job risk. Job risk addresses stressors that involved perceived threats to workers' health and safety such as extended work without relief, emergency

responding and various threats of harm to self and others, and excludes threats to job security, prolonged attention to detail and excessive heat or noise on the job. The organizational stress and job risk items are interspersed in the WSI. Items 1, 3, 4, 8, 9, 11, 12, 13, 16, 20, 22, 23, 25, 26, 29, 30, 31, 34, 38 and 40 represent the OR items. The remaining 20 items represent the JR items. The current study focused primarily on the organizational stress aspect. However, scoring and statistical analysis of the job risk items are also included in this research.

Answers for all WSI test items are on a five-point scale. All of the WSI questions are written as gerund phrases which consist of from three to fourteen words. Two examples of the organizational stress questions are: "having constant supervision" and "disagreeing with superiors". Two examples of the job risk stress are: "being injured as a result of the mistakes of others" and "knowing that your error may harm another person". The WSI is a paper-and-pencil scale for group administration. Response choices, presented as the numbers "0" through "4" are circled. Subjects' names were not requested, as Barone (1988)



believed that a stress-denying response results. The WSI was self-administered for the current research.

Scoring of the WSI. The WSI generates a total of five scores. Intensity and Frequency score are calculated for each of the two 20-item subsets:

- (1) Organizational Stress INTENSITY (ORI)
- (2) Organizational Stress FREQUENCY (ORF)
- (3) Job Risk INTENSITY (JRI)
- (4) Job Risk FREQUENCY (JRF)
- (5) Composite Intensity and Frequency

The Intensity score for each 20 item subset (Organizational and Job Risk Stress ) is calculated by summing the amounts of stress circled for each scale item. (Note that Job Risk Stress addresses health and safety concerns and is defined as stress resulting from fear of harm to self or others.) The OR and JR Intensity score for each subject has a possible range of 0 to 80, with 0 representative of no feelings of stress and 80 equating to very much stress.

A Frequency score for each subset (Organizational and Job Risk Stress) is the sum of the numbers circled for each scale item. The OR and JR Frequency score for each subject has a possible range of 0 to 80, with

0 indicating that the events never occur and 80 representing that the events occur daily.

One additional score, the Composite Score, is optional. It can be calculated by summing the products of the Intensity and Frequency scores. The Composite Score was not used for the current research.

#### Instrument Reliability and Validity

Four studies involving over 1,300 workers were conducted to develop the WSI (Barone, et al., 1988). The first two studies developed a 25-item Organizational Stress instrument. The subsequent two studies converted the Organizational Stress instrument to a 20-item subset, developed and added a 20-item Job Risk subset to the instrument.

The WSI studies (Barone, et al., 1988) established separate internally consistent unifactor scales for work stress and job risk. The studies found the two WSI scales (organizational stress and job risk stress) to be factorially distinct. The organizational stress items deal with employee's perceived lack of information, input into decisions, and autonomy; lack of clear communication, support, and recognition from supervisors; and conflicting and excessive job demands. The job risk stress items deal

with emergency responding, extended work without relief, and various other perceived threats of harm to self and others. The job risk stress instrument excluded items involving threats to job security, prolonged attention to detail and excessive heat or noise on the job.

Convergent construct validity for the WSI was established with the Job Descriptive Index (JDI), the Hassles Scale (HS), the trait portion of the State-Trait Anxiety Inventory (STAI), and the Organizational Commitment Questionnaire. According to Smith, Kendall, and Hulin (1969), as cited by Barone, et al. (1988), the JDI assesses five aspects of job satisfaction: work, pay, opportunities for promotion, supervision, and coworkers. It has been used most extensively in research with blue-collar workers, and is the most common measure of work satisfaction. The HS has subjects indicate how many of 117 daily hassles have occurred in the previous month and the severity of each.

The STAI has subjects evaluate their feelings. Subjects rate feelings both at the time of test administration and also obtain general state and trait

anxiety evaluations (Kanner, Coyne, Schaefer, and Lazurus, 1981, as cited by Barone, et al., 1988).

The Organizational Commitment Questionnaire was added as a fourth measure to establish the construct validity of the WSI. According to Mowday, Porter, and Steers (1982), as cited by Barone, et al. (1988), this instrument has been shown to be related to work and absenteeism, turnover, job satisfaction and other variables relevant to work stress.

Barone, et al. (1988) reported that after revisions following each study, the final version of the WSI had item-total correlations of at least .55. Coefficient alphas ranged from .91 to .93. Test retest reliabilities ranged from .88 to .91. The WSI was normed with several occupations, which consisted primarily of white-collar and grey-collar workers. (Grey-collar workers were defined as those employed in administrative positions.)

Barone, et al. (1988) reported that correlations between the WSI and the other test instruments' constructs were all in the expected directions. Correlations with organizational stress intensity and frequency were positive between stress and anxiety and between satisfaction and commitment, and negative

across the opposite-scored measures. The relationships with measures of similar constructs were significant in the expected directions but low enough to justify organizational stress as a separate construct. As predicted, job risk (safety) was much less correlated with other measures: not at all with commitment, slightly with satisfaction with work and supervision, and more with trait anxiety. For further details supporting the reliability and validity of the WSI, the reader is referred to Barone, et al., which is noted in the references.

#### Research Design

In order to answer the research question, independent t-tests were calculated for the samples scores. There were four different sets of variables, all at the interval level of measurement. The dependent variables were:

- 1) Organizational Stress Intensity (ORI)
- 2) Organizational Stress Frequency (ORF)
- 3) Job Risk Intensity (JRI)
- 4) Job Risk Frequency (JRF)

In selecting the t-test, the following assumptions were made:

- 1) Subjects were selected as a sample of convenience rather than a random sample. Howell (1992) discusses the robustness of the t-test and that certain basic assumptions can be changed without invalidating the test results.
- 2) Scores were normally distributed.
- 3) The level of measurement is at the interval level for the dependent variables.
- 4) There is an equality in the degree of variance in the samples used for comparison.

The t-test statistical design was used to compare average organizational stress intensity and frequency, and job risk intensity and frequency, for two groups, white-collar and blue-collar subjects. Alpha was established at .05.

## Chapter 4

### Results

#### Test Results

The four t-tests were calculated for ORI, ORF, JRI, and JRF. Summaries of the results of the t-test results are explained below. Alpha was established at .05 for all tests and two-tailed hypotheses were assumed in all cases.

Organizational Stress Intensity (ORI). The t-test was used to determine if a significant difference existed between the average ORI scores of white-collar subjects and blue-collar subjects. Table 6 provides the calculated t-test for ORI with white-collar and blue-collar workers, the independent variables.

The ORI mean for white-collar subjects was 38.0, while the mean for blue-collar subjects was 28.4. The observed significance level for the Levene test was large ( $p=.380$ ), concluding that it is likely that the variance of the two populations from which the samples were drawn were equal.

The calculated t-value, with 70 df, was -2.29, with an observed significance level of .025. The probability of obtaining the calculated t-value of

-2.29 was .025 which implies that the mean differences exceed random expectations. Therefore, the null hypothesis was rejected. It is probable that a significant difference exists between the average ORI score for white-collar and blue-collar subjects.

**Table 6**

**Organizational Stress Intensity (ORI)**

	N	Mean	SD	SE of Mean
White-Collar	37	38.027	16.016	2.633
Blue-Collar	35	28.371	19.593	3.312
Mean Difference				-9.656
Levene's Test for Equality of Variance				P = .380
T-Value				-2.29
DF				70
2-Tail Significance				.025
SE of Difference				4.207
95% CI for Difference				-18.049, -1.262



Organizational Stress Frequency (ORF). Next the t-test was calculated to determine if a difference existed between the average ORF scores (N=72) of white-collar subjects (N=37) and blue-collar subjects (N=35). Table 7 provides the calculated t-test for ORF with white-collar and blue-collar workers, the independent variables.

The ORF mean for white-collar subjects was 37.0, while the mean for blue-collar subjects was 29.3. The observed significance level for the Levene test was  $p=.109$ , concluding that it is likely that the variance of the two populations from which the samples were drawn are equal.

The calculated t-value, with 70 df, was -2.07, with an observed significance level of .042. The probability of obtaining the calculated t-value of -2.07 is only 4.2% of the time if there is no difference in the means of the sample. Therefore, the null hypothesis is rejected. It is probable that a difference exists between the average ORF score for white-collar and blue-collar subjects.

Job Risk Intensity (JRI). The t-test was used to

determine if a significant difference existed between

**Table 7**

Organizational Stress Frequency (ORF)

	N	Mean	SD	SE of Mean
White-Collar	37	37.000	13.354	2.195
Blue-Collar	35	29.286	18.076	3.055
Mean Difference				-7.714
Levene's Test for Equality of Variance				P = .109
T-Value				-2.07
DF				70
2-Tail Significance				.042
SE of Difference				3.731
95% CI for Difference				-15.158, -.271

with an observed significance level

of .042, 95.8% of the time it is likely

that a t-value of -.02 would be obtained if

no difference existed between the JRI scores of

white-collar and blue-collar subjects. No evidence

is shown that the null hypothesis is not true. It is

reasonable that there is no difference in the average

JRI score of white-collar and blue-collar subjects.

Job Risk Intensity (JRI). The t-test was used to determine if a significant difference existed between the average JRI scores (N=72) of white-collar subjects (N=37) and blue-collar subjects (N=35). Table 8 provides the calculated t-test for JRI with white-collar and blue-collar workers, the independent variables.

The JRI mean for white-collar subjects was 22.3, while the mean for blue-collar subjects was 20.1. The observed significance level for the Levene test was large ( $p=.794$ ), concluding that it is likely that the variance of the two populations from which the samples were drawn were equal.

The calculated t-value, with 70 degrees of freedom, was  $-.62$ , with an observed significance level of  $.535$ . Therefore, 53.5% of the time it is likely that a calculated t-value of  $-.62$  would be obtained if no difference existed between the JRI scores of white-collar and blue-collar subjects. No evidence indicates that the null hypothesis is not true. It is feasible that there is no difference in the average JRI score of white-collar and blue-collar subjects.

Job Risk Frequency Table 8 The t-test was used

Job Risk Intensity (JRI)

	N	Mean	SD	SE of Mean
White-Collar	37	22.324	14.911	2.451
Blue-Collar	35	20.057	15.969	2.699
Mean Difference				-2.267
Levene's Test for Equality of Variance				P = .794
T-Value				- .62
DF				70
2-Tail Significance				.535
SE of Difference				3.639
95% CI for Difference				-9.527, -4.993

The t-value, with 70 df, was -.60, which is not significant at the .05 level of .692. Therefore, at the time it is likely that a difference of -.60 will be obtained if no difference exists between the JRI scores of white-collar and blue-collar subjects. No evidence suggests that the null hypothesis is not true. Indications are that there is no difference in the average JRI score of white-collar and blue-collar subjects.

Job Risk Frequency (JRF). The t-test was used to determine if a significant difference existed between the average JRF scores (N=72) of white-collar subjects (N=37) and blue-collar subjects (N=35). Table 9 provides the calculated t-test for JRF with white-collar and blue-collar workers, the independent variables.

The JRF mean for white-collar subjects was 19.2, while the mean for blue-collar subjects was 18.2. The observed significance level for the Levene test ( $p=.114$ ) indicates that it is likely that the variance of the two populations from which the samples were drawn are equal.

The calculated t-value, with 70 df, was  $-.40$ , with an observed significance level of  $.692$ . Therefore, 69.2% of the time it is likely that a calculated t-value of  $-.40$  will be obtained if no difference existed between the JRF scores of white-collar and blue-collar subjects. No evidence supports that the null hypothesis is not true. Indications are that there is no difference in the average JRF score of white-collar and blue-collar subjects.

## Chapter 5

## Discussion

## LITERATURE REVIEW AND THE CURRENT FINDINGS

Table 9

Job Risk Frequency (JRF)

	N	Mean	SD	SE of Mean
White-Collar	37	19.189	9.165	1.507
Blue-Collar	35	18.200	11.856	2.004
Mean Difference				-.989
Levene's Test for Equality of Variance				P = .114
T-Value				- .40
DF				70
2-Tail Significance				.692
SE of Difference				2.490
95% CI for Difference				- 5.956, 3.977

## Chapter 5

### Discussion

#### Literature Review and the Current Findings

Average stress scores. The literature review revealed that stress-related health problems are widespread in the American population (Donovan, 1987) and the literature identified work as a major contributing factor (Donovan, 1987; Trice, 1992; Weber, 1991). In the current research, the average organizational stress scores of the subjects (shown in Table 6) equated to little to moderate perceived organizational stress. The average scores on the test instrument ranged between 20 to 39 (an average score of 20 equated to little stress and an average of 39 equated to moderate organizational stress).

The white-collar subjects' mean scores for organizational stress intensity and frequency was 38 and 37 respectively, both in the moderate range. The blue-collar subjects' mean scores for organizational stress intensity and frequency was 28 and 29 respectively.

The WSI test instrument was not designed to measure the subjects' physical or psychological

manifestations or symptoms of stress. The instrument also excluded test items related to environmental stress factors, such as excessive heat or noise.

Layoffs. The literature discussed the recent decline in employment within the aerospace industry (Phillips, 1994; unknown author, MDA-E, Jan. 18, 1993). When the current research was conducted, MDA workers had recently experienced several layoffs and rumors were rampant regarding future layoffs. Data collected in the research indicated that although only 22% of the subjects had been previously laid off at MDA, approximately 33% worried that they would be laid off within the next one to three years, and over half of the subjects reported that they sometimes worried that they would be laid off in the future. It is beyond the scope of the current research to assess any impact that concerns over being laid off may or may not have had on the average stress scores.

Stress theories and constructs. Various stress theories and constructs of stress were also discussed in the literature review (Donovan, 1987; Ganster & Schaubroeck, 1991; LaForge & Wagenaar, 1994). The WSI test instrument included various items which related



to several of the stress theories and constructs addressed in the literature review.

The WSI organizational stress subset included items which centered on the chronic type of stress described in the literature as objective life stress or environmental factors. Test items in the WSI job risk subset related to the acute type of stress discussed in the objective life stress model. Other WSI test items utilized the subjective life stress model described in the literature review which focused on the individual's appraisal of environmental demands.

Job stressors, job demands and perceived job control were discussed in the literature as well as stress management interventions (Ganster & Schaubroeck, 1991; Jackson & Schuler, 1985; Stater, 1989). Various WSI test items focused on job stressors, job demands, and perceived job control. The WSI was not designed to measure nor did it include test items related to stress management interventions.

Gender as a variable. In the literature review, Baruch (1987) indicated that work-related stress studies have tended to focus on males and to neglect gender as a variable. For the current research the

WSI instrument was used to assess differences between the average organizational and job risk stress scores for white-collar as compared with blue-collar subjects. Distinctions were not made between average scores for male subjects as compared with female subjects. Since 82% of the subjects in this research were male, the conclusions reported in this study represent findings drawn from a predominantly male sample.

Job safety and stress. Many of the safety and health issues discussed in the literature (Hairston, 1995; Patel, 1991; Rose, 1995; Shimpock-Vieweg, 1995) were included in the WSI 20-item job risk subset. Test items included subjects' rating their stress due to working while fatigued, working excessive overtime and fear of being the victim of a crime while on the job.

Studies of white and blue-collar workers. The literature discussed various differences between the work environments of blue and white-collar workers (Patel, 1991). The literature did not yield any recent studies which compared the average organizational stress levels between the white and blue-collar workers due to environmental factors. The

WSI was not designed to measure the effect, if any, of the differences in work environments on the subjects' average stress scores.

#### Limitations of the Current Research

The current study represents data collected from a large aerospace manufacturing company. Results of this study should not be generalized to white and blue-collar workers in other industries.

Results of this research are based primarily on white male subjects, although it does include a few subjects (N=7) from other ethnic groups and some female subjects (N=13). The researcher believes, however, that this study does not adequately represent minority groups (including females and other ethnic groups). Caution should therefore be used in generalizing results of this study to females or other ethnic groups.

While the WSI has been validated as psychometrically sound, the researcher questioned whether some of the subjects' responses in the JRI subset were reflective of the actual test instructions. For example, subjects were asked to indicate the amount of stress that is experienced or would be experienced if the event described in the

test item were to occur. The researcher noted that most subjects responded that they would feel little job risk stress (safety) intensity with "working in a high crime area" or "having to deal with injury or death as part of your job".

Subjects' responses on the job risk frequency (JRF) indicated that the frequency that these events occurred on their jobs were "never" or "rarely". It appears that perhaps subjects rated the job risk stress intensity (JRI) based on the frequency that the job risk (safety) event (JRF) actually occurred in their jobs. It appeared that the JRI responses did not consider the stress intensity subjects would have experienced if the event were to occur.

#### Recommendations

Further studies are needed which address reduction of organizational job stress from a two-dimensional approach that includes both the individual and the situation. Donovan (1987) reported that a systems approach to work related stress is needed in industry rather than the stress management training which is directed at the individual. With a systems approach, change to problems inherent in the workplace (the situation) would enhance and compliment

efforts to reduce organizational stress at the individual level. Further studies that explore

With the current trend of corporate "downsizing" and "rightsizing" (reductions of work force), studies are needed to determine if worker stress is accelerated when layoffs have either occurred or are anticipated by workers. Studies to determine how workers can best cope with stress in the workplace during the trend of corporate downsizing are needed.

As noted in the literature, differences frequently exist in the work environments of blue-collar as compared with white-collar workers. However, a review of the current literature yielded no studies of the impact the differences in work environments may have on organizational stress. The test instrument used for the current research was not designed to address any differences in work environments. The WSI specifically excluded organizational stress test items related to environmental factors such as excessive noise and heat. However, the literature review established that differences often exist between the environments of white-collar as compared to blue-collar workers. The literature also reported that the work environment

often contributes to the stress levels experienced by blue-collar workers. Further studies that explore the relationship of environmental factors and organizational stress are needed.

The results of this study conclude that it is probable that a significant difference existed between the average ORI scores for white-collar and blue-collar subjects. Further studies are needed to explore what factors or constructs might generate a significant difference in perceived work stress between white and blue-collar workers.

APPENDIX A  
QUESTIONNAIRE INFORMATION & INSTRUCTIONS

## GENERAL INFORMATION AND INSTRUCTIONS

### PURPOSE OF THIS INVENTORY

The information you provide on both the attached Data Sheet and the work sheet inventory will be used as part of a Federal project to fulfill a student's educational requirements.

### INSTRUCTIONS:

Please mark only one answer to each question on the Data Sheet.

Remember that the purpose of this project for the work sheet inventory will be to help you. These instructions are designed to help you complete the work sheet inventory.

## **APPENDIX A GENERAL INFORMATION & INSTRUCTIONS**

Please mark only one answer on the Data Sheet. Mark only one answer on the work sheet inventory. Mark the identity of the Data Sheet on the work sheet inventory.

Please complete the Data Sheet and the work sheet inventory within the next few days. Then place your completed, addressed, signed envelope which contains the completed Data Sheet and work sheet inventory as soon as possible.

Your participation in this student research project is appreciated. **THANK YOU!**

## GENERAL INFORMATION AND INSTRUCTIONS

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### PURPOSE OF THIS INVENTORY

The information you provide on both the attached Data Sheet and the Work Stress Inventory will be used as part of a Research Project to fulfill a student's educational requirement.

### INSTRUCTIONS:

Please mark only one answer for each question on the Data Sheet.

Carefully read the separate "Instructions" for the Work Stress Inventory prior to completing it. These instructions are provided on the first page of the Work Stress Inventory.

Please do NOT include your name on the Data Sheet or Work Stress Inventory. Personal identity of the participants is not needed.

Please complete both the Data Sheet and the Work Stress Inventory within the next few days. Then place both in the self-addressed, stamped envelope which is attached. Please mail the completed Data Sheet and Work Stress Inventory as soon as possible.

Your participation in this student research project is appreciated. THANK YOU!



### DATA SHEET

- 1. IS THE SUBJECT OF THIS CASE A VETERAN?  
 YES  NO
- 2. IS THE SUBJECT OF THIS CASE A MEMBER OF AN ORGANIZED VETERANS GROUP?  
 YES  NO
- 3. IN THE PREVIOUS 12 MONTHS OF SERVICE IN THE ARMY OF THE U.S.  
 YES  NO  YES  NO
- 4. FOR HOW MANY YEARS HAS THE SUBJECT BEEN EMPLOYED BY THE U.S. ARMY?  
 YES  NO  YES  NO
- 5. HAS THE SUBJECT EVER BEEN AWARDED A MEDAL?  
 YES  NO
- 6. IS THE SUBJECT OF THIS CASE A MEMBER OF THE U.S. ARMY?  
 YES  NO

### APPENDIX B DEMOGRAPHIC DATA SHEET

- 1. RACE OF SUBJECT  
 WHITE  BLACK  OTHER
- 2. SEX OF SUBJECT  
 MALE  FEMALE
- 3. AGE OF SUBJECT AT TIME OF SERVICE  
 18-24  25-34  35-44  45-54
- 4. EDUCATION LEVEL OF SUBJECT  
 HIGH SCHOOL  COLLEGE  POSTGRADUATE
- 5. MARITAL STATUS OF SUBJECT  
 SINGLE  MARRIED  DIVORCED  WIDOWED
- 6. RELIGIOUS BELIEFS OF SUBJECT  
 NONE  OTHER
- 7. RELIGIOUS BELIEFS OF SUBJECT  
 NONE  OTHER

## DATA SHEET

1. IS YOUR JOB CLASSIFIED AS UNION OR SALARIED?  
 UNION                       SALARIED
2. IS YOUR JOB IN SUPERVISION/MANAGEMENT OR NON-SUPERVISION/MANAGEMENT?  
 SUPERVISION/  
MANAGEMENT                       NON-SUPERVISION/  
NON-MANAGEMENT
3. HOW MANY UNINTERRUPTED YEARS OF SERVICE DO YOU HAVE AT MDA?  
 LESS THAN                       5-10 YRS                       11-20 YRS                       OVER 20 YRS  
5 YRS.
4. HOW MANY YEARS HAVE YOU WORKED IN YOUR CURRENT CLASSIFICATION OR JOB AT MDA?  
 LESS THAN                       5-10 YRS                       11-20 YRS                       OVER 20 YRS  
5 YRS.
5. HAVE YOU EVER BEEN LAID-OFF FROM MDA?  
 YES                       NO
6. DO YOU THINK YOU MIGHT BE LAID-OFF FROM MDA WITHIN THE NEXT ONE TO THREE YEARS?  
 YES                       NO
7. HOW OFTEN DO YOU WORRY ABOUT BEING LAID-OFF?  
 ALWAYS                       OFTEN                       SOMETIMES                       NEVER
8. WHAT IS YOUR GENDER?  
 MALE                       FEMALE
9. WHAT IS YOUR CURRENT AGE?  
 UNDER 30 YRS                       30-40 YRS                       41-50 YRS                       OVER 50 YRS.
10. WHAT IS YOUR CURRENT MARITAL STATUS?  
 MARRIED                       DIVORCED OR  
SEPARATED                       WIDOWED
11. HOW MANY CHILDREN DO YOU HAVE?  
 NONE                       1 - 2                       3 OR MORE
12. WHAT IS THE HIGHEST LEVEL OF YOUR EDUCATION?  
 HIGH SCHOOL                       ASSOCIATE                       BACHELOR'S                       MASTER'S                       DOCTORATE  
DIPLOMA                      DEGREE(S)                      DEGREE(S)                      DEGREE(S)                      DEGREE(S)

## WORK STRESS INVENTORY

The purpose of this inventory is to identify the presence of occupational strain, pressure, dissatisfaction, and stress.

### INSTRUCTIONS

Read the following statements and indicate how often you experience each of the following items in your work life. Use the following scale to indicate the frequency of each item.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very often

### APPENDIX C WORK STRESS INVENTORY (WSI)

1. Name
2. Title (position)
3. Department (or branch)
4. Date (or time)
5. Date

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## WORK STRESS WORK STRESS INVENTORY

Stress, for the purpose of this inventory, is defined as feelings or emotional strain, pressure, discomfort, uneasiness, and/or tension.

### INSTRUCTIONS:

You are to evaluate your current job for the **AMOUNT AND FREQUENCY** of stress experienced. For each item, use the following scale to indicate the **AMOUNT** of stress that is experienced or would be if it were to occur:

0. None
1. A little
2. Moderate amount
3. Much
4. Very much

Then, use the following scale to indicate how **OFTEN** it occurs, stressful or not:

0. Never
1. Rarely (annually)
2. Sometimes (at least monthly)
3. Often (at least weekly)
4. Daily

Be sure to **CIRCLE** an answer for amount and frequency for each item.

1. Not knowing what superiors expect	0	1	2	3	4
2. Working in constant or "high intensity" time	0	1	2	3	4
3. The amount of work is too much	0	1	2	3	4
4. Not knowing what to do	0	1	2	3	4
5. Working in a "high stress" area	0	1	2	3	4
6. Being exposed to a noisy or uncomfortable work area	0	1	2	3	4
7. Working in a "high stress" area	0	1	2	3	4
8. Working in a "high stress" area	0	1	2	3	4
9. Working in a "high stress" area	0	1	2	3	4
10. Working in a "high stress" area	0	1	2	3	4

## WORK STRESS INVENTORY

	AMOUNT OF STRESS:					FREQUENCY:				
	NONE	SLIGHTLY	MORE	MUCH	VERY MUCH	NEVER	RARELY	SOMETIMES	OFTEN	DAILY
1. Not knowing what superiors expect of you.	0	1	2	3	4	0	1	2	3	4
2. Having to respond on an "emergency basis".	0	1	2	3	4	0	1	2	3	4
3. Disagreeing with superiors.	0	1	2	3	4	0	1	2	3	4
4. Not knowing how much authority you have.	0	1	2	3	4	0	1	2	3	4
5. Being injured as a result of the mistakes of others.	0	1	2	3	4	0	1	2	3	4
6. Having to deal with injury or death as part of your job.	0	1	2	3	4	0	1	2	3	4
7. Having to make decisions that will dramatically affect other peoples' lives.	0	1	2	3	4	0	1	2	3	4
8. Finding that rewards are not based on performance (e.g., promotions, raises).	0	1	2	3	4	0	1	2	3	4
9. Having to deal with several pressing problems at once.	0	1	2	3	4	0	1	2	3	4
10. Working in a "high crime area".	0	1	2	3	4	0	1	2	3	4

## WORK STRESS INVENTORY

	AMOUNT OF STRESS:					FREQUENCY:				
	N O N E	L I T T L E	M O D E R A T E	M U C H	V E R Y M U C H	N E V E R	R A R E L Y	S O M E T I M E S	O F T E N	D A I L Y
11. Not knowing what supervisors think of you.	0	1	2	3	4	0	1	2	3	4
12. Not having the opportunity to participate in decision-making.	0	1	2	3	4	0	1	2	3	4
13. Having conflicting job responsibilities.	0	1	2	3	4	0	1	2	3	4
14. Working without adequate safety standards.	0	1	2	3	4	0	1	2	3	4
15. Having inadequate personnel or equipment to respond in an emergency situation.	0	1	2	3	4	0	1	2	3	4
16. Feeling there is no clear chain of command.	0	1	2	3	4	0	1	2	3	4
17. Having periods of inactivity separated by periods of emergency response.	0	1	2	3	4	0	1	2	3	4
18. Having to physically restrain others.	0	1	2	3	4	0	1	2	3	4
19. Potential for being injured on the job.	0	1	2	3	4	0	1	2	3	4
20. Being held responsible for too many different activities.	0	1	2	3	4	0	1	2	3	4

**WORK STRESS INVENTORY**

	AMOUNT OF STRESS:					FREQUENCY:				
	N O N E	L I T T L E	M O D E R A T E	M U C H	V E R Y  M U C H	N E V E R	R A R E L Y	S O M E T I M E S	O F T E N	D A I L Y
21. Knowing that your error may harm another person.	0	1	2	3	4	0	1	2	3	4
22. Failing to receive recognition of achievement by superiors.	0	1	2	3	4	0	1	2	3	4
23. Having to do things on the job that are against your better judgement.	0	1	2	3	4	0	1	2	3	4
24. Never knowing when a potentially dangerous event might occur.	0	1	2	3	4	0	1	2	3	4
25. Feeling that your work ability is under rated.	0	1	2	3	4	0	1	2	3	4
26. Not being permitted to make decisions on your own.	0	1	2	3	4	0	1	2	3	4
27. Working for long periods of time without rest.	0	1	2	3	4	0	1	2	3	4
28. Performing duties that are potentially dangerous to others.	0	1	2	3	4	0	1	2	3	4
29. Receiving criticism from superiors.	0	1	2	3	4	0	1	2	3	4
30. Receiving conflicting requests.	0	1	2	3	4	0	1	2	3	4

WORK STRESS INVENTORY

	AMOUNT OF STRESS:					FREQUENCY:				
	N O N E	L I T T L E	M O D E R A T E	M U C H	V E R Y M U C H	N E V E R	R A R E L Y	S O M E T I M E S	O F T E N	D A I L Y
31. Finding a lack of assistance or support from superiors.	0	1	2	3	4	0	1	2	3	4
32. Working in excess of eight hours per day.	0	1	2	3	4	0	1	2	3	4
33. Working with dangerous materials.	0	1	2	3	4	0	1	2	3	4
34. Having ideas considerably different from those of your superiors.	0	1	2	3	4	0	1	2	3	4
35. Doing another person's job in addition to yours.	0	1	2	3	4	0	1	2	3	4
36. Having to maintain prolonged vigilance to protect the safety of others.	0	1	2	3	4	0	1	2	3	4
37. Potential for being the victim of a crime while on the job.	0	1	2	3	4	0	1	2	3	4
38. Being held responsible for mistakes made by co-workers.	0	1	2	3	4	0	1	2	3	4
39. Working while fatigued or tired.	0	1	2	3	4	0	1	2	3	4
40. Working under inconsistent policies and guidelines.	0	1	2	3	4	0	1	2	3	4



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