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Occupational stress management: Matching interventions with employee characteristics

Johnson, Kenneth A., Dr.P.H.
University of Hawai'i, 1992
OCCUPATIONAL STRESS MANAGEMENT: MATCHING INTERVENTIONS WITH EMPLOYEE CHARACTERISTICS

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PUBLIC HEALTH

MAY 1992

By

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ACKNOWLEDGMENTS

First and foremost, thanks to God for without the very breath of life this dissertation could not have been completed. Special acknowledgements must also be given to the administration and workers at Hawaiian Electric Company for their assistance and participation in the research project. The doctoral committee members were very helpful and gave hours of valuable time reading numerous drafts, and the continuous support from family and friends was greatly appreciated. Finally, thanks to Divine Mother who was chosen to save souls by renouncing all, entering the One, and returning with His Master Key. Like an eggshell filled with pure spirit, she freely quieted each mind and showed the most direct route to our real home within. By unlocking the consciousness and chipping away at the iceberg of illusion that blocks realization of the ocean, the inner voice could be heard and obeyed. Then, step by step she showed the most liberal, effortless way for householders to live a practical, contented and stress-free life in Truth and Light for this modern age.
ABSTRACT

This study explored the relationship between employee characteristics including perceived value of the proposed training, temperament type, typical style of making attributions, preferred intervention format and participation in an employer-sponsored stress management program. Subjects were given an opportunity to participate in an intervention that matched subject format preference (independent, group, or a combination of independent and group activities) either exactly, partially or not at all. The dependent measures included the National Institute of Occupational Safety and Health (NIOSH) General Stress Inventory (GSI); the Keirsey-Bates Temperament Type Inventory, which is a short version of the Myers-Briggs Type Indicator (MBTI); and an attribution inventory which was developed exclusively for this research project.

Results indicated that the sample was exposed to stressors in the non-work environment as well as in the work environment. Non-work demands included attending school, being the major caretaker for children and an elderly person, working at an additional job, community involvement or household duties. The major work-related stressors included mental demands, quantitative workload, lack of job satisfaction, lack of perceived control over job duties, and role conflict. The sample reported practicing positive lifestyle behaviors that facilitate stress management including eating a balanced diet, avoiding drugs and alcohol, exercising and practicing systematic relaxation techniques. Significant differences were found in the distribution of temperament types. Value of training was positively related to course
format, and attribution scores changed positively after stress management training (although replication of the findings on a larger sample would allow more confidence in the findings). Subjects who were ready for behavioral change were more likely to participate in the stress management program than those who were not. Subjects assigned to a training format which matched their stated preference were more likely to participate in the training than those who were assigned to training that did not match the original preference. The attribution inventory proved to be a reliable and valid measure of attribution pattern, and subjects who completed the stress management intervention demonstrated an increase of attribution to self for problems in the work environment and solutions to those problems.
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CHAPTER I: THE PROBLEM

This research project deals with the difficulties encountered when designing organizationally sponsored worksite stress management interventions without consideration of employee characteristics. This chapter discusses the nature of the problem investigated by this research project. The section on background includes a discussion of occupational stress, stressors, stress response outcomes, measuring occupational stress, and stress management interventions. The section on the current status of the research includes the model created for this research. Research questions and hypotheses which relate to this problem are stated and discussed. The final section involves a discussion of the implications this problem has to further research, public health practice and policy.

Background

Particularly over the last ten years, occupational health has been a topic of growing concern, as demonstrated by a rapid increase in the number of organizations which sponsor occupational health promotion activities (Gebhardt and Crump, 1990). Specific activities depend on program priorities, but they are usually directed toward health risk factors such as smoking cessation (Danaher, 1980); alcohol and drug abuse (DuPont, 1980); weight control and nutrition education (Foreyt, 1980); physical activity (Haskell and Blair, 1980; Shephard et al. 1982; Luopajarvi, 1987; Caudron, 1990); hypertension control (Alderman, 1980) and stress management (Matteson and Ivancevich, 1982). Of these activities, stress management has gained widespread...
support from employers, employees, and other professionals, for it encompasses a broad spectrum of topics ranging from the specific concerns of personal health and safety to broad organizational, social and legal issues.

The rapid increase in organizationally sponsored stress management interventions is related to three major factors: 1) the high cost of health care; 2) the increasing awareness in the general population regarding the relationship between lifestyle, stress, disease, disability and death; and 3) the development of theoretical models and research on stress and its effective management.

The high cost of health care has had a great impact on worksite health issues (Bly and Richardson, 1986). Reduced Federal support for health care has forced businesses to pay a larger share of employee health care costs. Also, employees are now eligible to file stress-related claims which increases the cost of health care. As a result, health care consumes more than 12.5% of the GNP, and 45% of business operating costs are related to health care (Sherman, 1990). Not only has the cost of health care services risen, but new health risks and increases in the utilization of services also contribute to higher employer costs (Califano, 1986). Worker compensation claims are increasing the number of provisions for awarding benefits for injuries related to stress at the worksite (Ivancevich, Matteson, and Richards, 1985), and stress-related worker compensation claims are, in general, more prevalent. Moreover, since employers pay approximately 80% of all private health insurance premiums (Clement and Gibbs, 1983), there is a strong interest in reducing the high
costs associated with health care premiums and services including hospitalization, absence (Bertera, 1990), disability, job turnover, and premature death (Everly, 1985; DeFreise, 1987; Jones, Bly and Richardson, 1990). Organizations are sponsoring health promotion activities to improve morale (Allegrante and Michela, 1990), health and productivity and reduce health care costs (Califano, 1986; Castillo-Salgado, 1984; Elias and Murphy, 1987; Fielding, 1984; Rentmeester, 1984; Sherman, 1990). Many programs include stress management (DHHS, 1987) and recognize the importance of evaluating cost effectiveness (Chenoweth, 1990).

Greater awareness in the general population about the association between lifestyle, disease, disability and death has impacted worksite health issues. Workers communicate with each other about stress-related health conditions and exposure to potentially stressful demands. Greater awareness exists regarding the sources and dynamics of stress at the worksite and ways to assess and evaluate stress management options (Elkin and Rosch, 1990).

Some of the more recent changes with stress-producing potential include technological developments related to computer utilization; workforce changes involving increased numbers of women, elderly and non-white immigrants; the rapid growth of service occupations, and reorganization factors such as layoffs, increased workload and role conflict. Individuals are faced with learning new technologies in addition to performing their regular duties. The new technologies often involve additional stressful demands such as exposure to the computer screen, muscle strain
from sitting for hours in an awkward position at the terminal, and keeping up with the
fast pace of change in computer technology. Increased numbers of women in the
workplace create new demands related to equal opportunities for advancement and
compensation, interpersonal adjustment in nontraditional situations, and redesigned or
restructured job duties. With economic demands increasing, elderly people are often
forced to rejoin the workforce to compensate for deficits in fixed income allowances.
Competition for jobs and retraining create demands for the elderly, coworkers and
employers. Increased numbers of immigrants in the workforce require adjustment
related to cultural differences, competition for jobs, wage rate discrepancies, and
communication difficulties. The rapid growth of service industries combines job
requirements involving high communication and stress tolerance with part-time hours,
high turnover, little training, and low pay. With many organizations adjusting to
economic pressure by reorganization, employees are often faced with new
responsibilities and increased workload. Vacant positions are often not filled to save
money and the duties are assigned to remaining employees. Changes in
reorganization often involve new management philosophies or personnel, both of
which also create adjustment demands on employees.

The media is filled with information and personal interest stories about stress in
this modern age of cultural change and advanced technology. Consequently,
individuals are becoming more interested in developing positive lifestyle behaviors
and reducing exposure to stressful demands. This new awareness has stimulated an
interest in organizationally sponsored activities designed to improve health by modifying lifestyle habits.

The rapid developments in health care costs and new awareness regarding stress in the workplace has stimulated theory development and research on stress (Vingerhoets and Marcelissen, 1988), with results that often support the effectiveness of stress management interventions. Stress management interventions have been associated with reductions in absenteeism (Bertera, 1990), improvements in employee safety and welfare, reduced health care costs, reduced legal costs, and lower costs for goods and services (Everly, 1985). However, there is still a shortage of methodologically sound stress management interventions. Prior to designing an effective worksite stress management intervention, it is necessary to establish operational definitions. Once established, those terms can help formulate the basis of a comprehensive framework which in turn can then be used to establish a model for the worksite stress management intervention.

Occupational Stress

The term "stress" is commonly found in professional journals as well as in the popular press although there is little consensus about definition. Many research studies have demonstrated associations between chronic stress response outcomes and psychosocial stressors (Kalimo, El-Batawi and Cooper, 1987), even though a precise and uniformly agreed-upon definition of stress is not forthcoming (Eichler, Silverman and Pratt, 1985). Some researchers define stress primarily in operational terms
according to the measurement instruments (i.e., stressful life events). However, a comprehensive definition of stress contains one or more of the following components: a demand made upon the individual, commonly referred to as a stressor; an individual’s psychological or physical response to the demand, called the stress response outcome; or a combination of the two (Selye, 1974; Beehr and Franz, 1986; Ivancevich and Matteson, 1980; Mason, 1975).

Stressors

Stressors can be either internal or external demands that create a physical or psychological strain on the organism. Physical demands include such diverse stimuli as viral infections, starvation, and traumatic injuries. Psychological demands involve attitudes, perceptions, emotional responses and cognitive abilities. Examples of internal psychological demands include expectations about how things "ought" to be, perceptions and causal attributions. Individual perceptions about personal competence, definition of health, health status and control of health have been associated with health-promoting lifestyle patterns (Salazar, 1991). Alexy (1990) reviewed data to compare characteristics that distinguished participants (n=101) from nonparticipants (n=100) in a worksite wellness program. Individuals with perceived efficacy for health promotion behaviors participated while those who viewed themselves as old or unfit tended not to participate in health promotion activities. In another study, Pender, Walker, Sechrist and Strombord (1990) reviewed data from 589 employees enrolled in six employer-sponsored health-promotion programs.
Findings indicated that perceived personal competence, definition of health, perceived health status and perceived control of health accounted for 31% of the variance in health-promoting lifestyle patterns. These factors and the perception of health as being internally controlled were predictive of health-promoting behaviors three months later.

Individual perception regarding responsibility for situational problems with stress-producing potential, and solutions to those problems is commonly referred to as causal attribution. A large amount of research has been conducted on attribution. Responsibility for problems and solutions can be perceived or attributed by the individual as lying somewhere along an imaginary continuum ranging from internal to external forces. The most internal attribution of responsibility for health behaviors is the individual. If one views the responsibility as belonging to a significant others (wife, coworkers, Doctor), then the locus of control is more external. Similarly, a more external attribution of locus of control would be involved if one perceives that the organization is responsible for maintaining individual health. Finally, the most external locus of control for individual health status involves forces beyond personal control such as luck or providence. Since research indicates that causal attributions impact the stress-producing effect of job demands (Brickman, 1982; Sharrock, Day, Qazi, and Brewin, 1990), attribution is a predominant component of this study. The topic of causal attribution as it relates to stress and stress management interventions is discussed in Chapter 2.
Stress-producing demands can be perceived by the individual as either positive or negative. Demands from positive as well as negative events can cause excitement and create obligations which further compound one's life. In real life situations, physical and psychological stressors are often interrelated. Physical injury can be accompanied by the fear of dying. Conversely, the experience of extreme anxiety can result in physical symptoms (Reich, 1986). When the impact of psychological stress is physiological, and the demand persists without being resolved, the organism is forced to respond.

**Stress Response Outcomes**

Stress response outcomes include physiological, psychological and behavioral reactions to demands. The reaction can be temporary, short-term strains (a few minutes, hours or days), or chronic (weeks, months and years). When certain conditions are combined, the potential stress-producing impact is increased. For example, the risk of delivering a preterm, low birthweight infant has been demonstrated to increase for women employed during pregnancy in jobs that involve high psychologic demands and limited control over the response to these demands. [Workers in this classification include waiters and food counter workers, nursing aides and orderlies, and cashiers (Homer, James, and Siegel, 1990)]. Although some stress may have a positive effect by stimulating productivity or fostering feelings of self-efficacy and self-worth, prolonged stress has been established as a potential risk factor in both physical and psychological illnesses (Hamburg, Elliott, and Parron, 1982).
Disease states that have been related to stress include heart disease, stroke, and suicide (Asterita, 1985); cancer (Sklar and Anisman, 1981); and impaired immunologic competence associated with increased vulnerability to infection and neoplasm (Jemmott and Locke, 1983). Heightened levels of stress can result in dysfunction that produces such disorders as hypertension, arrhythmias, angina, migraine headache, and Raynaud's syndrome (Asterita, 1985). Stressful situations and life events can also have a short-term, temporary but adverse effect on health status and daily functioning. Specific negative outcomes include shortness of breath; increased perspiration; loss of confidence; increased use of alcohol, tobacco, or drugs; declining productivity; and absenteeism from work (Goldberger and Brenitz, 1982). These negative outcomes also contribute to the escalating health care costs because individuals who experience them often seek professional attention for medical and psychological symptoms and complaints. Other less obvious reasons are that individuals who experience stress-related symptoms often produce less or have a negative influence on the concentration, moral and performance of other workers concentration, morale and performance. Family members are involved when an employee is experiencing changes in health status and may seek professional attention. Most employee health plans include benefits for dependents (which increases costs related to utilization of services). Therefore, worksite health promotion programs in the future might include more services for dependents (Vass and Walsh-Allis, 1990) in an effort to promote health and reduce escalating costs.
Measuring Occupational Stress

The increased interest in occupational stress has exposed problems of definition and measurement. Many researchers have used incomplete forms of standardized measurements in an attempt to save time or to focus on only that segment which appears to be relevant for their particular purposes. Use of only partial inventories creates questions of reliability and validity. Other problems occur when measures of job stress are combined with stress response outcomes. Job stressors include the work conditions that precede acute reactions in the worker including short-term physiological, psychological and behavioral responses. These transient reactions (which will be discussed later) have an impact on more permanent, long-term indicators of physical and mental health (Murphy and Hurrell, 1987). Individual factors, non-work factors and buffer factors also account for individual differences in response to job stressors.

To remedy problems related to occupational stress measurement, researchers at the National Institute for Occupational Safety and Health (NIOSH) selected specific variables for inclusion in a General Stress Inventory (GSI) appropriate for occupational situations according to content analysis of recent job stress literature. Figure 1 lists all of the major categories of factors related to job stress that were used to develop the NIOSH GSI questionnaire.
Figure 1

Job Stress Factors
(Adapted from Hurrell and McLaney, 1988)

<table>
<thead>
<tr>
<th>JOB STRESSORS</th>
<th>ACUTE REACTIONS</th>
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<td>Role Ambiguity</td>
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<td>Job Control</td>
<td>Poor Interpersonal Skills</td>
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<td>Employment Opportunities</td>
<td>Accidents/Job Related Injuries</td>
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<td>Quantitative Workload</td>
<td>Substance Abuse</td>
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<td>Variance in Work Load</td>
<td>Absence from Work</td>
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<td>Responsibility for People</td>
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<td>Underutilization of Abilities</td>
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<td>Cognitive Demands</td>
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<td>Marital Status</td>
<td>Physician-Diagnosed Conditions</td>
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<td>Job Tenure</td>
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<th>BUFFER FACTORS</th>
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Empirical measures that have demonstrated evidence of validity and reliability, absence of stressor-strain confounding, and use in previous research, were selected for all of the factors listed in Figure 1. New multi-item scales were constructed when no sound measures were available. The questionnaire was administered to a stratified random sample of union nurses (N=700) in the Canadian province of Newfoundland and Labrador. Factor analysis of each multi-item scale (using both principal components and principal factor methods) revealed that items were reliable and comparable to standard construction formats. Factor-based scales compared favorably with original construction formats and they had acceptable reliability (alpha).
coefficients ranging from .65 to .90 (mean = .81). Findings included the following: role conflict (10 items, alpha=.82), role ambiguity (6 items, alpha=.74), intragroup conflict (8 items, alpha=.85), intergroup conflict (8 items, alpha=.85). Principal factor and principal component analysis (using oblique rotation) of the nurses' responses to the conflict items indicated that there were three factors present: intragroup conflict (alpha=.79), intergroup conflict (alpha=.85), and group cohesion (4 items, alpha=.81). Scales were analyzed for job future ambiguity (4 items, alpha=.65) and perceived control (16 items, alpha=.90).

Principal factor analysis (oblique rotation) with Scree test indicated the presence of four factors: task control (alpha=.85), decision control (alpha=.74), physical environment control (alpha=.79), and resource control (alpha=.82). Lack of alternative opportunities (4 items, alpha=.80), social support (3 items) from supervisor (alpha=.88), from coworkers (alpha=.84), and from family/friends (alpha=.85) were also calculated. Principal factors and principal component analysis (using oblique rotation) of responses to all workload items by nurses indicated the following factors: quantitative workload (11 items, alpha=.75), variance in workload (7 items, alpha=.90), responsibility for people (4 items, alpha=.62), skill underutilization (3 items, alpha=.73), mental demands (5 items, alpha=.75), type A personality (20 items, alpha=.85), self-esteem (10 items, alpha=.85), somatic complaints (17 items, alpha=.87), and job satisfaction (4 items, alpha=.83).
The above discussion demonstrates how job stressors can be identified for specific populations, and suggests how findings could be used to design stress management interventions. To enhance the comparability of this study, the NIOSH instrument was chosen, and related findings were used to design the stress management intervention.

A Framework For Worksite Stress Management Interventions

A worksite stress management intervention could focus on any aspect of the stress response pattern including stressors, stress response outcomes, or a combination of the two. Although some stress is necessary, excessive stress has been established as a health risk factor (Dohrenwend and Dohrenwend, 1974). Ethical concerns arise when the program focus is merely to alter employee reactions rather than to make the organization less stressful (Ganster et al., 1982) because no attempt is made to alter the organizational source of the problem. Consequently, the burden is placed on the worker to change the reaction, rather than directing attention to removing the source of stress. Stress management interventions could be designed to focus on either the individual, the organization, or a combination of both. For example, an attributional stress management intervention is one that is designed to influence the causal attributions of employee attitudes regarding stress-related worksite problems and solutions to those problems. A comprehensive worksite stress management program would include all components. However, not all organizations intend to initiate comprehensive programs. Specific interventions are often conducted to address the particular concerns of the population and the worksite. For the purposes of this
research project, worksite stress management interventions are defined as any activity, sponsored by the organization, designed to 1) reduce or limit stressors, 2) facilitate the employee’s ability to cope with the demands, or 3) a combination of both 1 and 2. Ivancevich, Matteson, Freedman and Phillips (1990) have created a useful framework for investigating, designing or conducting stress management research (Figure 2).

**Figure 2**

Worksite Stress Management Interventions Framework  
(Ivancevich, Matteson, Freedman and Phillips, 1990)

As indicated in Figure 2, there are three possible points in the stress cycle that can be targeted by stress management interventions. These include interventions a) to reduce the intensity or number of stressors present, b) to facilitate employee efforts to modify their appraisal of potential sources of stress, or c) to help employees to cope
more effectively with stress outcomes. According to Ivancevich and his associates, each intervention point has particular considerations. A) To change the degree of stress potential researchers must consider job design and redesign, human factors engineering, skills and safety training, and selection and placement decisions. B) To change employee cognition about potentially stressful situations, researchers and program leaders must have an understanding of individual differences such as personality traits, values, and needs assessment. C) To foster coping skills, training can be conducted in problem diagnosis and treatment.

Interventions could be designed to focus on (1) situational stressors, (2) cognitive appraisals, and/or (3) coping strategies. Situational stressors include the worksite stressors discussed previously. Cognitive appraisals could be designed to influence assessment of the work environment and climate, self-efficacy and perceived personal competence, knowledge of the stress response pattern, perceived effectiveness of stress management interventions, and causal attribution to facilitate internal responsibility for reducing workplace stressors or limiting their negative impact. Coping strategies could be designed to increase social support and promote the practice of positive lifestyle behaviors. There are specific intervention types, targets and outcomes related to the stress process.
Intervention Types, Targets and Outcomes

Ivancevich, Matteson, Freedman and Phillips (1990) have created a framework which provides a basis for understanding stress management interventions. Figure 2 presents a graphic representation of the various targets, types and outcomes involved in stress management interventions.

Figure 3

Stress Management Interventions: Targets, Types and Outcomes
(Ivancevich, Matteson, Freedman and Phillips, 1990)

The conceptual framework presented in Figure 3 is a comprehensive guide to potential strategies for stress management interventions. The associated interventions
would focus on (A) the individual, (B) the organization or, (A and B) the interface between the two. Interventions could also be designed to address individual thoughts and behaviors; organizational conditions involving climate, training and working conditions; or the interface between the individual and the organization such as matching jobs with people and fostering autonomy and positive relations. Likewise, potential outcomes would impact the individual, the organization or a combination of both. Appropriate outcome measures would relate to the type of intervention in the areas of individual performance and reported perceptions; organizational statistics regarding accidents, productivity and attendance; and the interface between the two such as individual job performance, satisfaction and health care utilization.

The potential targets, types and outcomes of stress management interventions are presented in Figure 2. In the world of industry, particular examples would depend on specific needs and concerns. Ultimate success for any stress management intervention would initially be based on cooperation between the employer, the employees and other individuals involved.

Early studies on stress management interventions did not demonstrate effectiveness in accomplishing stated program goals. The reasons for this phenomena are that the early studies were not based on comprehensive models and did not involve sound experimental methodology. The first studies were characterized by cross-sectional non-experimental designs, lack of control groups, and reliance of subjective participant responses. There are more studies being conducted now and the
methodology is more systematic and stringent. Awareness has increased regarding the importance of designing interventions and outcomes that incorporate individual and organizational needs. However, one area that is lacking in the literature involves the impact of designing interventions that take employee characteristics (their individual differences) into account. The problem that this research project is designed to investigate is "employer sponsored stress management interventions that are designed to be sensitive to different employee characteristics will have more success than interventions that are designed without attention to employee characteristics".

**Current Status**

Research related to stress management has improved over the last ten years. The major strengths of the studies include overall design, measurement and evaluation. Many studies include control groups and incorporate valid and reliable measures for demands and response outcomes. The primary focus has centered on outcomes related to demands that are perceived as aversive, including physical, psychological and behavioral responses. Activities are designed to facilitate physical and psychological coping mechanisms, and some focus on reducing the presence of stressors, or neutralizing their stress-producing potential. Ivancevich and his associates (1990) reviewed the current literature on stress management interventions and found the majority of studies to be well designed, based on a well-defined conceptual framework. Most studies employed control subjects, multiple and
objective outcome measures, and longitudinal quasi-experimental or experimental
designs. A growing number of companies are making a commitment to stress
management (Elkin and Rosch, 1990). Successful programs are based on
comprehensive models (Marcocci, 1990; Salazar, 1991), obtain management support
and market the programs effectively (Linnan, Harden, Bucknam and Carleton, 1990),
and often used a variety of intervention levels.

Bellingham and Isham (1990) identified five possible intervention strategies:
awareness, motivation, behavior change, maintenance and culture change. Effective
programs include efforts to increase awareness in the target population regarding the
stress process including the source of demands or stressors, the consequences of stress
or stress responses outcomes, and stress management techniques. Motivation can be
stimulated through rewards and incentives to participate. Interventions are designed
and offered in order to facilitate participation and behavior change. Subjects can
reduce the impact of stressful demands by practicing positive lifestyle behaviors
including exercise, relaxation techniques, and coping strategies (which will be
expanded upon in a later section). Successful programs also include a follow-up for
participants to encourage maintenance of the desired behaviors. Efforts are often
made to encourage continued participation in the program activities and to maintain
recommended behaviors (Lovato and Green, 1990). Finally, some programs focus
on organizational culture and climate to identify controllable demands within the
organization that can be addressed through program interventions in order to reduce the source of stress.

Current research findings indicate that participation in stress management intervention can result in improved attitudes (Holzbach, Piserchia, McFadden, Hartwell, Herrmann, and Fielding, 1990), significant improvements in participants' coping skills and anxiety, hostility and depression reduction (Carrington et al., 1980; Collings, 1984). Results from the Johnson and Johnson "Live for Life" and the Control Data Staywell health promotion programs (Jose and Anderson, 1986) both indicate positive physical (lower blood pressure), psychological (job satisfaction) and behavioral outcomes for stress management outcomes (Baun, Bernacki and Tsai, 1986; Bowne, Russell, Morgan, Optenberg and Clarke, 1984; Peterson, 1985).

Although there has been considerable improvement in stress management research over the last ten years, some weaknesses are evident. The outcomes of organizationally-sponsored worksite stress management interventions that do not involve a sound experimental design have limited value and questionable validity. Although there are an increasing number of studies performed, few involve interventions and outcomes designed to address both individuals and the organization. The majority of studies emphasize the individual (Newman and Beehr, 1979; DeFrank and Cooper, 1987; Murphy, 1986), very few include interventions focused on the organization, and none involve any attempt to match employee characteristics with program interventions. If discrepancies exist between employer perceptions and
employee perceptions, it is difficult to design intervention measures. Programs
initiated by employers are not necessarily attractive to employees. For example, the
employer may emphasize employee reactions to problems and promote changes in
employee attitudes while employees may prefer alteration of workload demands or
changes in the physical environment which reduce the presence of stressors. Attitudes
and values involving health and economics may not be shared. Employees may desire
increased benefits for family members while employers could favor reductions in
health care benefits to reduce the high cost of employee health care.

As suggested by Charles White (1988), because preconceived ideas about the
nature of the problem may focus attention on solutions directed toward symptoms
which are attractive to employers rather than employees, it is necessary to arrive at
some agreement prior to designing interventions. For example, the individual may
perceive the problem to be an excessive workload and poor working conditions.
Conversely, the employer may perceive the problem to be a lack of effort or training.
The problem identified in this study is that the majority of current studies incorporate
interventions and outcome measures that focus on the individual, a few focus on
either the organization or a combination of individual and organizational interventions
and outcomes, and very few involve employees in the selection of intervention
strategies or formats.
Factors Related to Training Outcome

Most employer-sponsored training programs take into consideration such factors as employee ability and motivational levels. It is commonly understood that employees who are motivated to complete the training, and who have the basic competencies required by the program, are more likely to succeed than those who are not motivated or lack basic ability. Therefore, efforts are often made to facilitate appropriate training and motivation. Baldwin and Magijuka (1991) investigated the effects of choice of training on trainee motivation and learning. In their study, trainees (n=207) were randomly assigned to one of three conditions: a) no choice of training; b) choice of training but choice not received; and c) choice of training with choice received. All subjects received the same type of training and training format. Results indicated that, after controlling for basic ability, trainees who completed the training of their choice demonstrated greater motivation to learn than trainees who did not receive their choice or were not allowed to choose. The authors suggest that future research in this area be designed to investigate the effect of choice with different formats. As suggested by this study, there is some indication that choice of format would impact participation in a stress management intervention. It is reasonable to surmise that certain types of personalities would be associated with format preference.

Temperament effects interactions in organizational settings (Hirsh and Kummerow, 1987). Factors such as introversion and extroversion, or a preference
for making decisions based on inner feelings and values could predispose employee preferences for either individual or group training sessions. For example, a group setting may be more desirable to someone who feels energized by group interaction than for one who finds it very restful to be alone. Likewise, people who have a high demand for information tend to prefer problem-based interventions that provide cognitive restructuring and information to explain the situation and its consequences. Those who tend to be emotion-based and have a low information demand respond to emotion focused interventions that emphasize redirection of energy such as in relaxation techniques. Attitudes about responsibility for stress-related workplace problems and potential solutions could influence active participation in particular programs. If employees feel that the stress at work is a result of management, and the organization is responsible for the solution, they are less likely to participate in an intervention directed toward increasing employee attribution of responsibility. The body of literature which centers around perceived attitudes is commonly called Attribution Theory (Kelley and Michele, 1980). Throughout the health promotion field, programs vary according to the relationship between the emphasis placed on the individual responsibility of employees and the social responsibility of employers for health promotion efforts. The success of any intervention program is related to several factors: a) ability and motivation, b) perceived readiness and relevance, and c) individual and corporate perceptions regarding who is responsible for the problem and who is responsible for the solution. While some research studies have included
interventions and outcome measures related to the individual and the organization, none have allowed individuals to choose interventions appropriate to their characteristics.

**Conceptual Framework**

The conceptual framework developed for this study concentrates primarily on aspects excluded from, or treated lightly by, other research. The intervention strategies and outcome measurements focus on the individual, the organization and the interface (Ivancevich, Matteson, Freedman, and Phillips, 1990). As displayed in Figure 3, (1) Worksite Stressors and (3) Non-Work Stressors have a reciprocal relationship with (2) Individual Characteristics. The stressors affect the individual and the individual has an affect on the worksite and the non-work environment. The (4) Buffers can serve to reduce the impact of the stressor on (5) Stress Response Outcomes. Similarly, stress response outcomes are influenced by the individual’s ability to perform health promoting lifestyle behaviors, and may limit the effectiveness of the buffers. This research intervention is designed to measure the presence and extent of stressors in the work and non-work environment, individual characteristics and buffers, and to determine current health status (as a measure of the extent of stress response outcome). Then, the research design involves (6) Matching by preference for temperament and preferred format. Individual temperament type and intervention format was determined and then subjects were systematically matched with either the (7) Independent, (8) Group or, (9) Combination (independent and
group) intervention format. The assumption was made that participation in the intervention would have an impact on worksite stressors, individual factors and non-work stressors. This research project is based on a model of the stress management process which was developed for this study (Figure 4).

Figure 4
Conceptual Framework For This Study

The conceptual framework presented in Figure 4 is similar to the models previously discussed (Ivancevich et al., 1990; and, Hurrell and Colligan, 1987) although it differs from other models in several unique ways. First, although this
model incorporates job stress factors specified by other researchers, additional factors have been included. For example, individual characteristics (2) such as ethnicity and culture, readiness for change, preferred intervention format, temperament type and attributional style were added. Furthermore, factors which act as buffers (4) to reduce the impact of stressors were added including social support, religious beliefs, and lifestyle behaviors.

Several feature of this model are unique to the literature. Although some research has included a few of these items, there have been no research studies on stress management interventions to date which have combined all these factors in this way. The design includes controls for preferred format, sex and occupation. Initial data was collected through the survey questionnaire on individual characteristics including temperament type and format preference. Then, that information was used to design of the stress management intervention. For example, subjects were asked to identify a preferred format. The effect of format preference was investigated by assigning equal numbers of male and female subjects based on the extent of the format match. An exact match was involved when an individual who preferred an independent intervention format was assigned to the independent group. A partial match was involved when someone who preferred the independent format was assigned to the combination group. Similarly, a mismatch was involved when the subject who preferred the independent format was assigned to the group intervention.

Another unique feature of this study relates to the development and evaluation
of the Attributional Pattern Assessment Inventory. The inventory was comprised of eight scenarios about problems that relate to the job duties for this sample of employees in engineering related occupations. The scenarios presented in the attribution inventory were balanced according to male and female power positions including the main character, supervisor and co-worker. Cultural values and biases were controlled for by using a variety of ethnic (Japanese, Hawaiian, Samoan, and American) names for the characters in each scenario.

Individual and organizational research outcomes were analyzed. Individual criteria included knowledge of the stress response pattern and stress management interventions, lifestyle changes and changes in causal attribution. Outcomes related to the organization involved reports of turnover, health care costs, stress related worker compensation claims, absenteeism and injuries. Reported injuries and stress related complaints were also analyzed.

Purpose

The purpose of this research project is to design, implement and evaluate an employer-sponsored stress management intervention which is sensitive to individual characteristics manifest by the target population. Related to that purpose are three basic research questions. (1) Is the type of training format preferred by employees associated with employee characteristics such as temperament type, readiness for behavioral change, and attribution pattern? (2) Is participation in an employer sponsored attributional stress management program related to employee characteristics
including temperament type, readiness for change, preferred format, and attribution pattern?  (3) Does participation in an employer sponsored attributional stress management program facilitate attributional change in the direction stipulated by the program goals (i.e., to increase attribution of responsibility to self for work-related problems and solutions to those problems to self and decrease the attribution of responsibility directed toward sources outside oneself)?  4) Are there predictors of format preference? Given that format preference in a new concept and at this moment there is not enough information available to make accurate format predictions, an exploratory investigation of how to best predict preference for various format options was conducted.

**Statement of the Hypotheses**

The following are related hypotheses (expressed as null hypotheses): 1) There will be no significant difference in a preferred-training format related to employee characteristics including temperament type, readiness for change, and attribution pattern; 2) There will be no significant difference in participation in the Attribution Stress Management Program related to employee characteristics including temperament type, readiness for change, preferred format, and attribution pattern; 3) Participation in an employer sponsored stress management program does not change attribution in the direction stipulated by the program goals; and, 4) There are no predictors of format preference and participation.
CHAPTER II: REVIEW OF RELATED LITERATURE

This chapter includes a review of the current literature related to designing organizationally sponsored stress management interventions while considering employee characteristics. The literature review explores each category of variables presented in this study's model including stressors, stress response outcomes, individual characteristics, buffers, matching, and stress management interventions.

Stressors

The primary emphasis in most stress research has been on measurement rather than definition. Although there have been many attempts to define stress, there has been no agreed-upon standard. The dominant instrument has been the survey questionnaire (Peavy, Lawlis and Goven, 1985; Levy et al., 1985; Calabrese, Mitchel, and Gold, 1987) and the Health Risk Appraisal (Breslow, Fielding, Herrman and Eilbur, 1990). Evidence of occupational stress is generally determined by identifying correlations between stressors (self-reports of job characteristics) and stress response outcomes (health-related complaints). Unfortunately, many instruments confound measures of job stress with measures of response outcome (Murphy and Hurrell, 1987). For example, measures of anxiety are often used as indicators of work stress. However, feelings of general anxiety may result from sources in addition to those found at the workplace. Another major problem is that previously developed scales are rarely used in their original form. This creates questions of reliability and validity. Employers are often interested in only a
particular aspect of behavior and use only the related part of a broader inventory. This practice is quite understandable considering issues of cost-effectiveness and the emphasis on productivity in industry, but it can interfere with the psychometric properties of instruments that were standardized as part of a group of measures. Moreover, in addition to the work-related demands, employees experience demands from conditions in the non-work environment as well.

**Non-Work Stressors**

The non-work environment presents many potential stress-producing demands associated with physical and mental health (Klitzman, House, Israel and Mero, 1990). Some characteristics could have either a positive or a negative effect on individual health status depending on the degree of involvement. For example, social support has been linked to health outcomes. There is evidence associating social support with coronary heart disease (CHD). People living in situations involving low social support (i.e., widowers), social disorganization and poverty, and those who are very mobile, have an increased risk for CHD while other groups with strong social networks are buffered or protected from CHD (Berkman and Syme, 1979).

Cultural factors and subcultural values may also have either positive or negative effects on health status. For example, Chinese-American students differed from members of the host society at the University of California, Berkeley (Sue and Kirk, 1972) in several ways. The Chinese American students a) scored higher on quantitative and lower on verbal and combined sections of the ability test; b) tended to
be more interested in physical sciences, applied technical fields, and business occupations, and less interested in social sciences, aesthetic-cultural fields, and verbal-linguistic vocations; and, c) were more conforming, less socially extraverted, preferring concrete-tangible approaches to life, and experiencing greater emotional distress than other students. Cultural attitudes may also influence the way individuals from one culture perceive individuals from another culture. Li-Repac (1980) conducted a study comparing the attitudes of five white and five Chinese-American therapists to the same white and Chinese clients seen on a videotaped interview. The findings were that 1) both therapist groups agreed on their conceptions of normalcy; 2) white therapists were more accurate in predicting self-descriptive responses of white than of Chinese clients; and 3) the white and Chinese therapists ratings on six clusters differed significantly. White therapists rated Chinese clients higher on a "Depression/Inhibition" cluster and lower on a "Social Poise/Interpersonal Capacity" cluster than the Chinese-American therapists. Chinese-American therapists judged the white clients to be more severely disturbed than did the white therapists. These differences were attributed to cultural as well as experiential characteristics of the therapists. Cultural patterns expressed in the family context influence values, beliefs, and judgements about lifestyle behavior (Litman, 1979). For example, only about two percent of the Japanese men in Hawaii live alone (Reed, McGee, Yano, and Feinleib, 1983). This phenomena has implications related to family structure and loss of spouse. Another example of a culturally related health risk is the high incidence of
depressive behaviors found in Native American communities. Manson and Shore (1981) found high prevalence and incidence of psychiatric disorders, alcoholism and stomach ulcers in the Indian reservation population that they studied. Contributing factors to these findings were cited as lack of access to treatment, cultural orientation, utilization of services and economic deprivation. Potential stress-producing factors are magnified when the number of cultures increases and when individuals interact with culturally different others (Brislin, 1986). Cultural values such as affiliation and interpersonal harmony can create demands for "locals" in Hawaii as well as other cultural groups (Caucasian, Asian, etc.) which value individual achievement and assertiveness (Whitney, 1986).

Difficulties arise when individuals from different cultures interact. A set of five concepts have been developed by Hofstede and his associates which are very useful when attempting to gain an awareness about the effects of culture on performance (Hofstede, 1980; Hofstede and Bond, 1988; Chinese Cultural Connection, 1987). Richard Brislin (1992) has discussed these five reasons in terms of why individuals from one culture experience difficulties interacting with culturally different others in the workforce. The five reasons, related to generalizations about culture and cultural differences, include 1) individualism contrasted with collectivism, 2) power distance between bosses and subordinates, 3) uncertainty avoidance, 4) masculine and feminine goals in the workplace, and 5) the influence of Confucian thought on people's values. Brislin discussed the five reasons using a variety of
cultural examples although the main illustration used was the example of an American (Peter Reed) working in Japan.

Because the current research study was conducted in a workforce comprised of individuals from a variety of different ethnic backgrounds, a brief discussion of Brislin's work will be presented here. Cultures vary with respect to the first reason or continuum, *individualism versus collectivism*. In the example given by Brislin, Peter was a highly productive, American, computer software specialist who preferred working independently rather than enlisting the assistance of coworkers (even though such cooperation could be beneficial to everyone). The Japanese firm maintained a collective organizational climate in which everyone worked together for the total good rather than for individual credit. What seemed perfectly natural and efficient to Peter was considered to be totally inappropriate to his supervisor and co-workers.

Cultures also differ according to the *power-distance* continuum, the amount of discomfort that people generally feel when disagreeing with one in power. Peter felt comfortable about being casual with some company policies (such as taking a long lunch break) because he felt that he was being productive in his own way and his previous American supervisor had permitted it. The Japanese culture, however, has a very strict power distance between the boss and subordinates, so Peter's supervisor was very uncomfortable when employees broke company policy.

The third continuum, *uncertainty avoidance*, involves the pervading sense that the future may not be as bright as the present. Cultures vary with respect to the
extent that efforts are made to avoid feelings about uncertainty concerning future prosperity. Japan is higher on this continuum than the United States. Consequently, Peter was used to being very flexible, made decisions independently, and did not fear loosing his job (since he felt he could always find work). The Japanese society perceives more uncertainty (such as the prospect of future business opportunities) and has established strong traditions and strict rules to deal with that uncertainty. Individuals are cautious about making decisions because they are not sure if the future reaction will be positive. Consequently, they seek the approval and decisions of superiors. Peter's independence and seeming lack of respect for the supervisor (from the Japanese viewpoint) was viewed in a negative light by all the workers.

Cultures also differ with respect to gender-related work role expectations. Gender differences (i.e., men are more aggressive and women are concerned more with relationships) are found in every culture. A "masculine" approach to work involves characteristics such as assertiveness, competitiveness, and tough decision-making that often disregards the feelings of people affected by the decision. A more "feminine" approach to situations in the workplace would facilitate cooperation, good working conditions, pleasant interactions, and a sensitivity to people's feelings when making decisions. The male and female roles are clearly defined in Japan. When Peter invited female workers to sit at his lunch table, he clearly overstepped the defined barriers between men and women. Power positions are held by males in Japan. They have access to information denied to women. Because lunch and breaks
are time when business issues can be discussed, the women would feel very uncomfortable at the men’s table since they did not have access to the same information and the roles are different.

Finally, Brislin discusses the profound influence of Confucian thought in Asia, resulting from the principles established in China by Kong Fu Ze (later changed to Confucius) around the time of 500 B.C. Confucian philosophy includes several key principles. The first, that unequal status relationships lead to a stable society does not imply total subservience characteristic of a master-slave relationship, but refers, rather, to relations involving mutual obligations (ruler-subject, father-son, for example). A second is that the family is typical of all social organizations (individuals are perceived as part of the group and efforts to maintain harmony are of great importance). Third, virtue in life is attained through diligence, acquisition of useful skills and education, frugality, and perseverance (and shame results from lack of effort). The concept of Confucian Dynamism is due to the fact that although the values may be found in the Asian countries studied, some placed greater emphasis on some of the teachings compared to others. The varying emphasis is associated with other, fluctuating conditions such as economic stability and political structure. The major elements of Confucian Dynamism include persistence and perseverance, ordering relationships by status and observing the established order, thrift, and having a sense of shame. Other values are recognized as having been discussed by Confucius, but receive relatively less influence in the choice among the countries,
thus illustrating the dynamic aspect of Confucian. These values are personal steadiness and stability; protecting face; respect for tradition; and reciprocation of greetings, favors, and gifts.

The shifting emphasis of values warrants further attention. In countries influenced by Confucian Dynamism, those experiencing economic growth emphasize hard work. Persistence and perseverance are important, particularly in times of stress or economic difficulty. Group interaction and a sense of shame prompt individuals to demonstrate diligence while maintaining harmony. Individual efforts outside the group effort are not characteristic. Even in the United States, where there are large populations of Asian citizens and increasing numbers of immigrants from Asian countries, Confucian Dynamism plays a significant role in determining the attitudes and behaviors of employees from related cultural backgrounds. This discussion explains the reasons for difficulties related to cultural differences and generalizations about culture. Culture impacts the stress-producing impact of non-work demands.

While major events such as the death of a spouse, or a severe illness and injury are obvious sources of stress, minor hassles (Lazarus, and Folkman, 1984) have also been associated with stress experienced by workers (London, 1983; Sheehan, 1981). Minor hassles involve persistent situations such as concern about weight and appearance, rising prices of goods, responsibilities at home, home maintenance, health of a family member, financial concerns and just too many things to do. Responsibility for the care of children or elderly family members can add
additional demands to working individuals. Demands from newborn infants, teenagers, grown children who leave the home to establish their own life, or even a "mid-life crisis" can be related to family life cycle and length of marriage (Wilensky, 1981). Another potential source of stress involves the social climate in the community and involvement in community activities. Additional demands are presented when one lives in a community that is culturally diverse or has a high crime rate. Furthermore, although some amount of involvement in community activities can be beneficial, too many activities can become a burden. This may have a negative impact on health status (Billings and Moos, 1981; Moos, 1981; 1987).

Worksites Stressors

There are four sources of demands in the workplace which can have a stress-producing impact on workers: 1) organizational climate; 2) relationships; 3) personal growth and system maintenance; 4) work design and the job/person interface. The general atmosphere which permeates a workplace is referred to as the organizational climate. Conditions of mistrust, disunity and disorganization create stressful demands on workers. There are several factors related to relationships at work that could create stress-producing demands on the individual. Role conflict (disagreement about responsibilities and procedures), role ambiguity (unclear lines of authority), interpersonal conflict (disharmony between workers), and responsibility for people (supervisory duties) create demands. Personal growth and system maintenance
include underutilization of abilities, cognitive demands, high workload, variance in workload, shift work, lack of job control, and job future ambiguity (Moos, 1986).

Work design and the job/person interface involve a variety of topics (Singleton, 1972; Webb, 1982). Factors in the physical environment such as temperature; noise level; nature and pace of work; the interface between worker, task, and machine (ergonomics); and the types of machines involved. For example, in a computer workstation, if chairs, screens or keyboards are not adjustable for individual differences, the worker may experience glare on the screen or may be forced to strain muscles in order to use the computer. Working under such conditions may result in physical and psychological discomfort, with adverse effects on morale, health status, and productivity. Shift work combined with advancing age have also been associated with loss of sleep (Akerstedt and Torsvall, 1981; Foreyt, 1980; Monk, 1985). Other job characteristics such as frequent overtime, working on the job for less than one year, and hazardous working conditions are predictors of industrial injuries (Leigh, 1986). Stressful working conditions can result in injuries, absences, low morale, losses in productivity, job turnover and an increase in stress response outcomes.

Stress Response Outcomes

Organizations throughout the nation share a common concern regarding the growing evidence which associates stressors in the workplace, employee stress response outcomes, and disease states (refer to Chapter I for more information). Included in the Year 2000 Objectives For The Nation are major goals for health
promotion and disease prevention with specific objectives for improving the nation’s health (Public Health Service, 1989). One of those specific objectives is to increase the number of worksites that provide programs to reduce worksite stressors and employee stress response outcomes. Worksite health promotion programs provide an excellent opportunity to reduce the risk of stress-related disorders. Not only does the majority of the adult population spend some amount of time in the workplace, but increasing occupational stress is compounded by the fluctuating changes occurring in the social (i.e. more women, immigrants and elderly in the workforce), and physical (new chemicals, crowded conditions, technology), environment (Cooper and Davidson, 1987). In order to insure that future programs are effective, current research efforts are needed which will identify key risk factors for occupational stress, populations, and stress management strategies for individuals and organizations.

In response to the 1990 Objectives for the Nation, the National Health Interview Survey (NHIS) was conducted by the National Center for Health Statistics (NCHS) to gain an understanding of the current health status of the American population. Data was collected using a nationwide household survey of the civilian, non-institutionalized population aged 18 years and older (Thornberry, Wilson, and Golden, 1986). Included in that survey were items on the amount of stress experienced in the past 2 weeks, the effect of stress on health, thoughts about seeking help for personal or emotional problems, actual help-seeking behaviors, and level of reported stress. The questionnaire did not include a definition of stress.
The report analyzed responses to these questions by sex and other respondent characteristics. Results of the study indicated that an estimated 34 million people aged 18 years and older experienced "a lot" of stress in the 2 week period preceding the interview. Twenty-three percent of the women in the study reported a lot of stress, compared to 18 percent of the men. Seventeen percent of the population considered seeking assistance in the past year for personal or emotional problems, and Sixty-nine percent of those reported that they actually did seek help. An estimated 21 million people (13 percent) reported that stress had "a lot" of effect on their health. Individuals who reported higher levels of stress than others of their sex also were more likely to report that they rarely or never ate breakfast, drank more alcoholic beverages than average, slept less than 6 hours per night and were physically less active than others of their sex. Although these data appear to be suggestive, the findings are not conclusive enough to permit casual inferences (Silverman et al., 1987). The researchers’ suggestions for future study include providing education to improve public awareness of the symptoms and consequences of stress and to provide effective mechanisms by which stress can be managed.

**Individual Characteristics**

Many research studies in the field of stress management have included individual characteristics as described in the discussion involving work conducted by the National Institute of Occupational Safety and Health (NIOSH) found in Chapter I.
This study introduces three new concepts: 1) readiness for behavioral change; 2) attribution; and, 3) temperament type. Each topic will be addressed below.

**Readiness for Behavioral Change**

Regardless of the specific features of a particular stress management intervention, the overall goal is to modify individual characteristics by facilitating some type behavior change. Programs are usually designed to either reduce behaviors with a negative health impact such as smoking, alcohol and drugs, or to increase behaviors with a positive health impact such as exercise, low cholesterol dietary habits and stress reduction techniques. Concordantly, health promotion programs are based either formally or informally on assumptions about the nature of behavior change. Kaplan (1984) lists four basic assumptions underlying the practice of health promotion. These include 1) that certain behaviors increase the risk of certain chronic diseases, 2) that changes in behavior can reduce the probability of risk in certain diseases, 3) that behavior can be easily changed, and 4) that behavioral interventions are cost effective. With respect to items 1 and 2, it has already been established in Chapter I that there is a relationship between stressors, stress response outcomes and disease conditions, and changes in behavior can reduce the impact of stress-producing demands. Certain interventions (particularly the relatively inexpensive interventions based on the compensatory model) have also been shown to be cost effective. However, prior to discussing the ease of behavior change, it is necessary to first understand how people change.
Prochaska (1991) proposes a Transtheoretical Model of behavior change which extends beyond traditional intrapersonal models to explain how individuals change. His theory was developed from analysis of the more than 400 currently practiced intrapersonal models of behavior change combined with a study of how people change on their own without professional intervention (Velicer, DiClemente, Prochaska, and Brandenburg, 1985). The uniqueness of this model is that it views behavioral change in the context of a temporal dimension related to readiness.

In the first stage, precontemplation, individuals have no intention of changing their current behavior. This stage is characterized by a lack of information, demoralization, low self-efficacy, and/or defensiveness. In the second stage, contemplation, individuals are seriously considering a change in behavior to occur in the next six months (although ambivalent attitudes about the pros and cons of change usually keep individuals in this stage for at least two years). The next stage is preparation. Individuals in the preparation stage evaluate the cons of the risk behavior as being greater than the pros. Intentional and behavioral criteria characterizes this stage.

The Action stage is characterized by overt behavioral changes (reduction of smoking by 50%, exercising three times per week, etc). Maintenance is the stage when the criterion has been realized, and fewer processes are needed to prevent relapse than during the previous stage. Termination is the stage when there is no temptation to engage in the old behavior.
According to Prochaska, the effectiveness of any intervention depends initially on the stage that an individual is in prior to the intervention. Very few (1-12%) of the population is in the preparation stage, although 70%-80% may express interest in participating. If individuals are already in the action stage, then the need of an intervention is reduced (except for maintenance). Interventions based on this model, according to Prochaska, must demonstrate relevance to participants for successful recruitment and retention. Resistance to the program will naturally arise, and relapse can be expected. The final goal is recovery (achieving and maintaining desired behavior) which is a process rather than an immediate outcome. The work of Prochaska demonstrates the importance of considering readiness to participate when designing and implementing a stress management intervention.

Attribution

An individual’s perception of self, society and environment can have a dramatic impact on health status. One’s overall attitude may affect perception of other events. For example, in a study by Kuiper, Olinger and Lyons (1986), the relationship between perceptions regarding negative life events, depression and global perceived stress were examined. Global perceived stress is defined by the authors as the general tendency to view one’s life as being unpredictable, out of control, and overwhelming. One hundred college students completed a testing session including the Beck Depression Inventory, the Perceived Stress Scale and the Life Experiences Survey. Results supported earlier findings which revealed an increase in depression
level as negative life changes score increased. Furthermore, global level of stress significantly moderated the relationship between depression and negative life events. Negative life changes had only a minimum impact on depression level for those who scored low on perceived stress. The opposite was found for those high on perceived stress who reported a more pronounced relationship. These findings support the concept that currently held attitudes can influence the perception of other events. Perception in this regard involves the way an individual observes and interprets events. As this study demonstrates, individual perception varies between individuals, and certain attitudes can influence the manner in which events are observed and interpreted.

The perceptual process involves the observation of characteristics. However, as demonstrated above, perception can be influenced by attitudes and beliefs. When an individual explains an event by indicating a cause, it is defined as an attribution. Attribution goes one step beyond mere observation, and, therefore, is more susceptible to the effects of prevailing attitudes. A simple illustration of attribution is that the world looks red through rose colored glasses. The same event is not seen in the same way by different people because each of us is influenced by our cultural background, our physical and mental capabilities, our life experiences, and our dreams and aspirations. These factors are our rose colored glasses which color the perception of events in our life. Consequently, this study includes attribution as a principal component.
For the purpose of this study, attribution will be defined as the perception of responsibility for workplace problems and solutions to those problems. The perception of individual success or failure depends on four attributions or attitudes about causal responsibility for problems and solutions to those problems. These attributions can be viewed as existing on an imaginary continuum with three aspects: locus, stability and controllability (Weiner, 1979). Locus involves the perception of the location of the cause, and can be internal ("me") or external ("not me"). Stability related to expectations about the future and whether the cause is perceived as stable or subject to change. Controllability involves the individuals's belief regarding ability to affect the outcome by controlling the cause. In an effort to explain the relationship between attributional factors, Hunter and Barker (1987) describe the three continuum of causality. Their ideas have been presented in the diagram below.

1. **LOCUS:** *Feelings (self-esteem, shame or guilt) are based on one's perception of the location of cause ranging from internal to external.*
   - Internal—"me"
   - Native Ability
   - Effort
   - External—"not me"
   - Task Difficulty
   - Luck

2. **STABILITY:** *Expectations about the future based on how stable the cause is perceived to be.*
   - Unstable
   - Effort
   - Luck
   - Stable
   - Native ability
   - Task difficulty

3. **CONTROLLABILITY:** *Potency to affect the outcome by controlling the cause.*
   - Controllable
   - Effort
   - Ability and Task Difficulty
   - Not Controllable
   - Luck

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Similar to the phenomena observed with respect to Confucian dynamism, emphasis of the three aspects of attribution (locus, stability and controllability) can vary from culture to culture. Attribution depends on individual preferences that may be similar within a particular culture, but not across cultures. According to Frieze (1976), individuals in the mainstream American culture attribute success or failure to four main factors: native ability, effort, task difficulty, and luck.

Hunter and Barker do not use the term "global" although the concept of a general tendency that influences one's view of life is included in their framework. For example, an individual might perceive future possibilities as being very bad with no hope for improvement (a relatively stable condition). On the other hand, one might perceive the world's future as uncertain, with the optimistic notion that anything could happen and that some of the possibilities could be positive (a relatively unstable condition). According to Hunter and Barker (1987), the attribution process begins with locus. Those who attribute success or failure to an internal locus of control assume a proactive stance and are more likely to have a positive self esteem. Success for an individual with an internal locus results from ability and effort. Similarly, failure results from a lack of effort (for which one could feel guilty) or from a lack of ability (for which one could feel ashamed). Future expectations rely on stability of the cause. Genetic ability is a factor that usually offers no possibility for change. Height is a physical attribute that cannot be changed by the individual. Likewise, task difficulty is perceived as relatively stable. For example, one might say
that math will always be easy/difficult for me. However, there are times when an individual has an invalid assessment of task difficulty and, thus inappropriately attributes difficulty to it. Self-effort is a controllable causal attribution. Ability, task difficulty and luck are not always within our control. Hunter and Barker conclude by discussing the implications of attribution to the educational process. If trainers are aware of the attribution process, individual intervention applications can be more effective.

Cultural differences have been found related to attributions of success and failure. Fry and Ghosh (1980) conducted a study involving 50 Asian Indian children (25 boys and 25 girls) and 50 Anglo-Saxon children (25 boys and 25 girls) between the ages of 8 from upper-middle class neighborhoods in a provincial Canadian community. Interviews with parents insured that all families were well-adjusted and involved equally in community associations. The methodology involved individual sessions providing each child an opportunity to predict actions of characters presented in the French Test of Insight by drawing pictures. The assumption was made that socialization training in different cultures provides impetus for assuming personal responsibility for negative and positive outcomes.

The hypothesis was confirmed that Asian subjects would assume more personal responsibility for failure and attribute success to luck because their early socialization training involves cultural values which encourage individuals to assume personal responsibility for all deeds and outcomes. The other hypothesis was also confirmed
that Caucasians would take greater personal credit for success and attribute failure to luck since the Caucasian Anglo-Saxon culture tends to value individual achievement and high ego involvement, while attributing failure to external factors such as luck, chance or task difficulty. The findings also indicated that the Asian children manifested a tendency to adjust to a lowered self-concept, rather than becoming more assertive. The above research indicates that individual characteristics can affect attribution. Therefore, it is important to consider attributional style when designing stress management interventions in the workplace.

Of particular interest to this research topic is attribution of responsibility for stress-related problems in the workplace and responsibility for solutions to those problems. Brickman (1982) has developed a model for analyzing underlying assumptions about health promotion in the workplace according to the level of attribution (high/low) to self of responsibility for problems and their solutions. Brickman’s model assumes that high or low attributions to oneself regarding either the problem or the solution can be related to attitudes and behavior. Inherent in each model are perceptions involved including the extent (High or Low) to which the attribution for the problem and solution is directed toward the individual (self). While the choice may not be a conscious intention, adoption of a particular model has important consequences for individuals who face problems and those who provide help. Brickman’s model is presented in Figure 5.
Figure 5
Consequences of Attribution

<table>
<thead>
<tr>
<th>Perception of Self</th>
<th>Actions expected of self</th>
<th>Others besides self who must act.</th>
<th>Actions expected of others</th>
<th>Implicit view of human nature</th>
<th>Potential pathology</th>
<th>Attribution to Self of responsibility for a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIGH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moral Model</td>
</tr>
<tr>
<td>Lazy</td>
<td>Striving</td>
<td>Peers</td>
<td>Exhortation</td>
<td>Strong</td>
<td>Loneliness</td>
<td>Guilty</td>
</tr>
<tr>
<td>Striving</td>
<td>Peers</td>
<td>Exhortation</td>
<td>Strong</td>
<td>Loneliness</td>
<td></td>
<td>Enlightenment Model</td>
</tr>
<tr>
<td>Peers</td>
<td>Exhortation</td>
<td>Strong</td>
<td>Loneliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LOW</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compensatory Model</td>
</tr>
<tr>
<td>Deprived</td>
<td>Assertion</td>
<td>Subordinates</td>
<td>Mobilization</td>
<td>Good</td>
<td>Alienation</td>
<td>Ill</td>
</tr>
<tr>
<td>Assertion</td>
<td>Subordinates</td>
<td>Mobilization</td>
<td>Good</td>
<td>Alienation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinates</td>
<td>Mobilization</td>
<td>Good</td>
<td>Alienation</td>
<td></td>
<td></td>
<td>II</td>
</tr>
<tr>
<td><strong>HIGH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Model</td>
</tr>
<tr>
<td>Lazy</td>
<td>Striving</td>
<td>Peers</td>
<td>Exhortation</td>
<td>Strong</td>
<td>Loneliness</td>
<td>Guilty</td>
</tr>
<tr>
<td>Striving</td>
<td>Peers</td>
<td>Exhortation</td>
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<td>Loneliness</td>
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<td><strong>LOW</strong></td>
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<td>Subordinates</td>
<td>Mobilization</td>
<td>Good</td>
<td>Alienation</td>
<td></td>
<td></td>
<td>II</td>
</tr>
</tbody>
</table>


The typology includes a set of four basic assumptions about the responsibility for helping and coping: the compensatory model, the moral model, the medical model, and the enlightenment model. The reasons for placement of several adjectives may not be clear. For example, the moral model may perceive individuals as "lazy"
which generates expectations for "striving" in conjunction with one's "peers" who also exhort or incite each other. Likewise, the Compensatory model perceives individuals as "deprived" and in need of more information. The actions expected of self are to be more "assertive" in conjunction with the mobilization of one’s subordinates. Overall outlook is good although the potential pathology involved would be alienation from ones social network.

The compensatory model assumes that inadequate resources are the cause of problems. Once society provides adequate resources and services, individuals are responsible for solving their problem. This model is recommended by the authors for several reasons. This may have the greatest long-term results of any of the four models because it assumes that individuals take responsibility for their own behavior. Anyone who adopts a more positive life style will maintain it longer since it is a matter of personal choice. The compensatory model also emphasizes empowerment for solutions to problems without blaming employees for the problem, and it can be implemented with limited employer resources.

The moral model assumes that people are responsible for both the cause and the solution of their problems. Problems persist because of a lack of individual effort, and solutions involve only limited social responsibility. The medical model assumes that people are not responsible for either the cause or the solution of their problems or illnesses. Expert consultants provide help and medication to resolve discomfort and eradicate disease conditions. While receiving treatment, individuals
are not required to fulfill normal duties. The enlightenment model assumes that individuals are responsible for causing their problems, but not for the solution. Programs operating from this perspective provide the social control through authority and assume workers need help solving their own problems.

If the individuals responsible for designing and implementing a health promotion program in the workplace choose a model which does not meet the needs of the employees they serve, the program may not provide the services needed. It is questionable to assume that individuals who are forced to attend a stress management intervention will participate fully or benefit as much as those who participate voluntarily. Brickman's article hypothesized that increases in individual competence would be more likely to occur with models in which people are held responsible for solutions (the compensatory and moral models). The benefit of not holding people responsible for problems removes the negative effect of guilt and blame while stimulating self-reliance and independence.

Brickman assumed that programs which are based on a compensatory (or a combination of the compensatory model and one or more other models) have the greatest probability for subject completion and long term results. Similarly, it could be postulated that employees who attribute responsibility to self for solutions to workplace problems would be the most likely to participate in appropriate employer sponsored workplace health promotion activities. Of course, if the program centers on a topic for which the individual is not at risk, or if the program is poorly designed
and implemented, low participation would be expected. Therefore, participation depends on attribution patterns as well as relevancy and efficacy of the program being offered. Furthermore, a low participation rate would be expected for those individuals who do not attribute responsibility to self for solutions to workplace health problems. Due to the specific nature of this research project, it is necessary to explore the various options available for assessing causal attribution.

Assessing Attribution

It is difficult to accurately assess individual attribution patterns for several reasons. First of all, subjects do not necessarily respond in an objective manner. Research indicates (Kelley and Michela, 1980) that subject attribution often reflects biases. Some people may tend to answer in such a way as to maintain a positive self image, or respond according to expectations about desired outcomes (i.e. please the researcher, or fit into the group). Subject ratings also vary depending upon several factors including such topics as role (whether the subject is an actor or an observer), stereotypic attitudes or preferences related to sexual bias, job classification (management/line), and risk factors (occupational stressors). One technique that is very useful for attributional training with populations from various cultural backgrounds is working with Critical Incidents (Brislin et al., 1986). Critical incidents can also be designed in such a way as to control for role bias by establishing all of the subjects as observers.
The first and earliest example in the literature of an inventory which has been
designed to measure attribution is the ASQ "Attributional Style Questionnaire
(Peterson, Semmel, von Baeyer, Abramson, Metalsky and Seligman, 1982). The
ASQ inventory was created to investigate the association between depressive
symptoms and attribution of bad events with internal (versus external) and global
(versus specific) causes. The authors assumed that the nature of depression following
uncontrollable events is governed by the causal attributions that the individual makes
about them. If the events are perceived as being caused by something about the
person (internal attributions) rather than about the situation (external attributions),
then it is assumed that the resulting depression will involve a loss of self-esteem. If
the events were considered to be nontransient (stable attributions) rather than transient
(unstable attributions) then long-lasting depressive symptoms were assumed. Finally,
if subjects attributed the uncontrollable events to causes present in a variety of
situations (global attributions) than the resulting depression was assumed to be
pervasive.

Reported means, reliabilities, intercorrelations, and test-retest stabilities for a
sample of 130 undergraduates indicate that the Attributional Style Questionnaire has
value for future research. No differences were found with respect to males and
females. Good events tended to be explained more internally, stably and globally
than bad events ($p < .0001$). The scale did not demonstrate consistency within
subscales, but ratings of internality, stability and globality for achievement events (i.e.

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looking for a job unsuccessfully) were significantly correlated with the respective ratings for affiliation events (a friend acts hostilely toward you).

The ASQ was expanded upon by Peterson and Villanova (1988). In the expanded version, the instructions and format were identical to the original ASQ but subjects were presented with 24 hypothetical bad events. Six of the bad events came from the original ASQ while the remaining were adapted from a life events questionnaire designed for college students. In both questionnaires, subjects were asked to imagine that the event happened to them, and to write one major cause of the event, rating it in terms of internality versus externality, stability versus instability, and globality versus specificity. Results indicated that lengthening the ASQ improved the reliabilities of the internal dimensions. Results from both scales indicated significant correlations with the Beck Depression Index. As predicted by the authors, learned helplessness is an attributional style associated with depression in college students in which internal, stable and global attributions are offered for bad events. While these findings may not be relevant for non-depressed populations, it is important to note that the characteristics (internal/external, stable/unstable, global/specific) of attributional style may relate to other situations involving problems in the workplace and solutions to those problems.

Although the original research conducted for the ASQ scale investigated the relationship between bad events and attribution, Sharrock, Day, Qazi and Brewin (1990) investigated the relationship between attribution helping behavior and
optimism. Thirty-four subjects from nursing and paramedic professions agreed to complete the questionnaire. Results indicated that there was no empirical justification for a separate global scale. The variable most closely associated with helping behavior was optimism. Higher levels of staff optimism were associated with attributions of problem behavior to unstable factors which allowed for the possibility for hope and a positive outcome.

The second and final example of an inventory designed to measure attribution is the Levels of Attribution and Change (LAC) scale (Norcross, Prochaska, and Hambrecht, 1983; Norcross, Prochaska, Guadagnoli, and Diclemente, 1984). This 60 item scale was designed to assess the levels and loci of causal attributions about a problem behavior. Principal component analysis was performed on two samples, 140 professional therapists and 194 adult smokers. In both cases, nine distinct and interpretable components were retained. The ten subscales were ordered from most external to most internal level of attribution including spiritual determinism, biological inadequacies, bad luck, environmental difficulties, maladaptive cognition, familial conflicts, interpersonal conflicts, intrapersonal conflicts, chosen lifestyle, and insufficient effort. Results indicated that the LAC has high internal consistency (ranging between .68 and .93) and demonstrates a stable factor structure. Validation studies on the LAC instrument indicate equal applicability to clinical as well as non-clinical populations.
Temperament Type

With respect to character and temperament, some people seem to be more extroverted, preferring the company of others, while some are more introverted and prefer to focus their attention inward. Some people make judgements in a very logical, systematic way while others arrive at conclusions intuitively. Peter and Katherine Meyers developed an inventory based on the work of Jung (1923) and Kretschmer (1925) which suggested that consistent patterns of action can be observed early in life and continue through adulthood with relatively few changes. The resulting instrument (Meyers, 1962) is called the Meyers-Briggs Type Indicator (MBTI). The MBTI was designed to measure variations in temperament type in order to understand differences in human behavior. The inventory has been administered to a large number of people. Verification of the results, which has been estimated to be accurate for 75% of the population (Meyers, 1962), comes from individual responses to the results. After people complete the test, they read about their personality traits in the manual and then decide for themselves whether the findings are accurate. If they feel the results are not representative of their own traits, they decide which one is more accurate. In this way, individuals learn about themselves and, through that process, gain information which is valuable for understanding others as well.

The MBTI identifies the differences in people according to four dimensions. The first dimension is whether people like to focus their attention on the outer (Extraversion) or inner (Introversion) world. The second identifies the preferred
method for acquiring information as either using the senses to discover what is happening (Sensing) or looking at patterns of the whole picture (Intuition). The third dimension involves how the information is processed to make decisions. According to the MBTI, people make decisions based on either a process of objective analysis (Thinking) or on personal values (Feeling). The fourth dimension describes the kind of lifestyle people prefer to adopt and how one is oriented toward the outer world. People who prefer a judging attitude (Thinking or Feeling) like to make decisions and achieve closure on issues. Those who prefer to deal with the world in a perceptive manner (Sensing or Intuition) like to be spontaneous and flexible. Figure 6 demonstrates the relationship between the four dimensions.

**Figure 6**

The Four Temperament Type Dimensions

```
<table>
<thead>
<tr>
<th>Focus of Attention</th>
<th>Orientation to the Outer World</th>
<th>How information is acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E Extraversion</td>
<td>S Sensing</td>
</tr>
<tr>
<td></td>
<td>I Introversion</td>
<td>N Intuition</td>
</tr>
<tr>
<td>Preference</td>
<td>P Perception</td>
<td>How decisions are made</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T Thinking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F Feeling</td>
</tr>
</tbody>
</table>
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As displayed in Figure 6, the MBTI provides an opportunity to identify individual preferences which combine to form a relatively consistent pattern of action. According to Meyers, individuals tend to prefer one of the extremes, and, therefore, do not develop the other side of their temperament. Based on extensive research on a variety of populations, Myers and McCaulley (1990) estimate type in the general population as presented in Table 1.

Table 1
Temperament Type in the General Population

<table>
<thead>
<tr>
<th></th>
<th>SENSING TYPES (S)</th>
<th>INTUITIVE TYPES (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(T)</td>
<td>(F)</td>
</tr>
<tr>
<td></td>
<td>with Thinking</td>
<td>with Feeling</td>
</tr>
<tr>
<td></td>
<td>with Feeling</td>
<td>with Thinking</td>
</tr>
<tr>
<td>INTROVERT (I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with (J) Judgement</td>
<td>ISTJ 5%</td>
<td>INFJ 2%</td>
</tr>
<tr>
<td>with (P) Perception</td>
<td>ISTP 5%</td>
<td>INFP 2%</td>
</tr>
<tr>
<td></td>
<td>ISFJ 5%</td>
<td>INTP 2%</td>
</tr>
<tr>
<td></td>
<td>ISFP 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENFP 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENTP 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>EXTRAVERT (E)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with (P) Perception</td>
<td>ESTP 14%</td>
<td>ENFP 5%</td>
</tr>
<tr>
<td></td>
<td>ESFP 14%</td>
<td>ENTP 5%</td>
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<td></td>
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</tbody>
</table>

E=75% I=25% J=50% S=75% N=25% T=50% F=50% IS=19% EN=19% NF=13% EJ=38% SJ=38% SF=38% SP=38% TP=25% SJ=19% ST=38% EP=38% TF=25%
The reliability and validity of the MBTI has been analyzed through many studies on thousands of subjects, and test results have been correlated with other standardized measures of personality characteristics. Although no other measure is designed to perform the same functions, correlations have been obtained for all of the factors (ranging from .40-.79) with the highest correlations obtained for the introversion-extroversion scale (Jungian Type Survey-.79; Eysenck Personality Questionnaire-.74; and, Rotter Internal-External Locus of Control). Reliability is determined through subject validation of type characteristics (ranging from $35\% p > .001 - 75\% p > .001$). Rather than looking at each preference scale individually, the combination of preferences reflects a pattern or style for each individual. Sixteen major combinations (permutations of the four dimensions) are possible.

Interpreting the MBTI scores is a complex task that requires an understanding of the various combinations as well as the characteristics of the specific population under examination. Due to the population specific variability of temperament type, it is necessary to compare a subsection with the general population. The MBTI data bank has temperament type preferences for approximately 200 occupations. Data on workers ($N=986$) in the Engineering field will be used to illustrate this process.

The preferences listed in Table 2 indicate that engineers in a variety of fields tend to prefer to make judgements by thinking. Approximately equal percentages prefer focusing their attention either inward (ISTJ=15%) or outward (ESTJ=12%).
In this way, temperament type information can be used to determine who might prefer the field of engineering, and who might be interested in performing duties related to the engineering field.

Table 2

Temperament Type Preferences for Engineering Workers (N=986)

<table>
<thead>
<tr>
<th>SENSING TYPES (S)</th>
<th>INTUITIVE TYPES (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Thinking(T)</td>
<td>with Feeling(F)</td>
</tr>
<tr>
<td>INTROVERT (I)</td>
<td></td>
</tr>
<tr>
<td>with (J)</td>
<td>ISTJ</td>
</tr>
<tr>
<td>Judgement</td>
<td>15%</td>
</tr>
<tr>
<td>with (P)</td>
<td>ISTP</td>
</tr>
<tr>
<td>Perception</td>
<td>5%</td>
</tr>
<tr>
<td>EXTRAVERT (E)</td>
<td></td>
</tr>
<tr>
<td>with (P)</td>
<td>ESTP</td>
</tr>
<tr>
<td>Perception</td>
<td>4%</td>
</tr>
<tr>
<td>with (J)</td>
<td>ESTJ</td>
</tr>
<tr>
<td>Judgement</td>
<td>12%</td>
</tr>
</tbody>
</table>

E=48%  S=53%  T=67%  J=60%  N=20%  F=27%  P=40%  SJ=38%  I=52%  N=47%  F=33%  P=40%  NT=27%  SP=16%

The MBTI is commonly used as an informational tool to gain an understanding about one’s own personality characteristics and to learn about others.

Keirsey and Bates (1984) have created a short form of the MBTI called the Keirsey-Bates Temperament Type Sorter. Subject validation reports and correlations

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with other standardized measures indicate that the Keirsey-Bates Temperament Type Sorter is only slightly less accurate in identifying subject preferences than the MBTI due to the fact that it has fewer items (one fourth of the MBTI). The four basic temperaments are described briefly below (refer to Keirsey and Bates, 1984 for a more detailed description).

The Dionysian SP Temperament (ISTP, ESTP, ISFP, ESFP) sensing, perceiving types are typically very independent "free spirits" who prefer to avoid commitments, rules and confinement (comprising 38 percent of the population). Their motto is "Enjoy today for tomorrow may never come".

The Epimethean SJ Temperament (ISFJ, ESFJ, ISTJ, ESTJ) prefer sensing, and judging. These types tend to be traditional, dutiful, and diligent. They prefer to conform to social values and strive to be useful to the social units that they belong to, and comprise about 38 percent of the general population.

The Promethean NT Temperament (INTP, ENTP, INTJ, ENTJ) types are intuitive thinkers. They are rather infrequent (about 12 percent of the general population). The Promethean strives to understand, control, predict and explain realities, thereby gaining power over nature. Their internal motivation is the driving force for personal excellence which can make them seem aloof, arrogant or overly critical of others.
The Apollonian NF Temperament (INFJ, ENFJ, INFP, ENFP) types tend to be intuitive, feeling a perpetual search for meaning and self awareness. They are also relatively rare in the general population (approximately 12 percent) and prefer working with words and people rather than objects, favoring teaching over such areas as physical science or commercial ventures. Figure 7 presents a summary of characteristics associated with each of the four temperaments.

**Figure 7**

Descriptions of the Four Temperaments

<table>
<thead>
<tr>
<th>Sensing Judging SJ</th>
<th>Sensing Perceiving SP</th>
<th>Intuitive Feeling NF</th>
<th>Intuitive Thinking NT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership Style</strong></td>
<td>traditional stabilizer consolidator</td>
<td>troubleshooter negotiator fire fighter</td>
<td>catalyst spokesperson energizer</td>
</tr>
<tr>
<td><strong>Work Style</strong></td>
<td>responsible diligent concentration</td>
<td>active clever spontaneous</td>
<td>cooperation values inspiration</td>
</tr>
<tr>
<td><strong>Learning Style</strong></td>
<td>step-by-step facts/logic planning</td>
<td>active factual immediacy</td>
<td>awareness personal imaginative mastery</td>
</tr>
<tr>
<td><strong>Acknowledged for</strong></td>
<td>timely output organization perspective</td>
<td>expeditious handling of unexpected the unusual not ordinary</td>
<td>personal vision warmth sympathy</td>
</tr>
</tbody>
</table>

As presented in Figure 7, the four temperaments can be characterized by certain styles in the areas of leadership, working, learning and contributions made.

For example, SJs tend to be traditionalists who work from a sense of responsibility,
learn in a very systematic manner, and complete job duties in a timely manner. SPs tend to be excellent troubleshooters who get actively involved the project at hand, and often can be counted on to arrive at solutions for unexpected or unusual problems. NFs are comfortable assuming the role of catalyst, enjoy working in conjunction with others, learn for self improvement and make personal contributions. NTs are logical visionaries who see the whole picture, learning through impersonal and analytical means, and who demonstrate competency with ideas. The information presented in Figure 7 will be referred to throughout this writing when describing the aspects of each of the four temperament types.

Analysis of temperament types can provide information on individual differences related to learning styles, and typical behavior patterns. Temperament Type may account for some amount of individual differences with respect to why certain individuals perceive a particular situation differently. Temperament Type may also affect preferences for training models. An introvert thinker may prefer independent study while an extrovert feeler probably would prefer group settings. Valuable information can be obtained by analyzing temperament types, training model preferences, and degree of participation in worksite health promotion programs.

Buffers

There are several factors which promote both participation in intervention programs and success of those programs. Some of the factors involve non-work behaviors. Harris and Guten (1979) reported that people engage in a broad spectrum
of health promoting behavior including health practices (daily health routines), safety practices (avoidance of injury), preventive health care (physical and dental exams), environmental hazard avoidance (high crime or polluted areas), and substance avoidance (not smoking, drinking, etc.). Other factors can be associated more directly with the efficacy of stress management interventions. Alexy (1991) surveyed 100 participants and 100 non-participants to compare characteristics. Findings indicated that perceived value of the program and self-efficacy contributed to participation while perceived physical and psychological barriers contributed to non-participation.

Other factors act as buffers to reduce the negative impact of stressors. Behavioral factors which occur naturally in some individuals can alter immunity and disease susceptibility. Women who express hostility can survive breast cancer longer than nonassertive women (Abeloff and Derogatis, 1977). Individuals who are high in activity inhibition and who control the expression of the power motive have more severe episodes of upper respiratory tract infection than individuals with low activity inhibition and low need for power (McClelland, Floor, Davidson, and Saron, 1980). These findings might be expressed another way by saying that individuals who tend to hold their feelings in, experience more respiratory episodes than those who don’t desire control and do not hold their feelings inside.

In a related finding involving social support, people with strong social support and social networks (Berkman and Syme, 1979) seemed to be buffered from coronary
heart disease. Furthermore, attention to sensory functioning and avoidance of stressful stimuli (Suls and Fletcher, 1985) reduces the impact of stress-producing stimuli. Another buffer which has been demonstrated to reduce the negative impact of stressors is laughter (Cousins, 1979). Still another potential buffer is religious beliefs. Studies of the effects of religious beliefs on morbidity and mortality has broadened to include specific health practices, social support, religious participation and health-related attitudes (Jarvis and Northcott, 1987, Allport and Ross, 1967; Koenig, Kvale and Ferrel, 1988). Aerobic fitness has also been identified as a potential buffer. Czajkowski, Hindelang, Dembroski, Mayerson, Parks and Holland (1990) examined the relations between aerobic fitness, psychological characteristics, and cardiovascular reactivity in a sample of 62 men divided into highly fit and less fit groups based on maximal treadmill tests. Highly fit subjects showed smaller increases in both diastolic blood pressure and heart rate. The less fit subjects also reported themselves to be more anxious and angry than the more fit subjects.

Intentional behaviors that buffer stress have been referred to as coping. Coping has been defined as any behavioral efforts which are made in an attempt to master, tolerate or reduce external and internal demands and the conflicts which occur between them (Folkman and Lazarus, 1980). Frankenhaeuser (1981) has identified several coping behaviors that can act as buffers to minimize the negative impact of stressful demands including unwinding after work, environments that provide individuals with an opportunity to control activities at work, modifications in job
design, and modifying one's lifestyle to minimize overexertion and overactivity.

Other coping behaviors have been identified such as a reflective rather than resentful style of coping with anger (Harburg, Blakelock and Roeper, 1979), and "a fighting spirit" (Greer, Morris and Pettingale, 1979). Some factors in the work environment may have stress-producing potential for some but actually act as a buffer for others. One example of this is workload and responsibility. Some people (particularly Type A personalities) demand a high workload because they are competitive and have a high need for achievement. However, for someone who values affiliation over achievement, high workload would not be rewarding and would, probably, become a source of stress. Assessing the major factors and intervening variables that impact the effect of work stressors on the individual is important (Billings and Moos, 1981).

**Matching**

The strategy of matching employee characteristics to stress management intervention formats, although relatively new, is found in the literature. In addition to matching by format preference (discussed in Chapter I), two other examples are Type A and B characteristics; and, information dissemination. Type A traits have been associated with increased workload and anxiety (Caplan and Jones, 1975). The first example of matching, *type A and B characteristics*, although commonly found in the literature has not been previously matched with respect to individual and organizational characteristics. Matteson and Ivancevich (1982) examined the individual and organizational fit for Type A and Type B behavior patterns. With a
sample of 315 medical technologists employed in over 80 hospitals and clinics in 27 States, individuals and organizations were classified according to the Type A and B behavior pattern dimensions. Type A individuals were characterized as hard driving, competitive, striving to accomplish more and more in less and less time, and manifesting impatience with those who were perceived as blocking their achievement. Type B individuals were characterized by the opposite of those behaviors. The same criteria was applied to the organizations. Findings indicated that Type B’s in B organizations report the fewest negative health symptoms, Type As in Type A organizations report the most, and mismatches of A and B are between).

The second example of matching individual characteristics with intervention strategies involves preferences for information dissemination. Information dissemination involves subject preference for information content (high or low information) and style (problem-focused or emotion-focused). Some individuals prefer to receive a great deal of information (high information content) and become dissatisfied when they don’t receive enough. Other individuals prefer to receive sensory stimulation (emotion-focused) such as soothing music and auditory exercises in relaxation (see Appendix B for examples). Martelli, Auerbach, Alexander and Mercuri (1987) conducted a study with 46 patients about to undergo a stressful oral surgery procedure. Four response measures (state anxiety, adjustment, satisfaction, pain intensity) and two measures of coping style (Ways of Coping Checklist and the Kranz Health Opinion Survey) were used prior to the intervention, after the
intervention and after the surgery. The interventions included either (A) problem-focused, (B) emotion-focused, or (C) mixed focus stress management intervention. Subjects were assigned to an intervention strategy in an ABCCBA sequence. Problem-focused coping was defined as cognitive activity that modified the stressor or minimized its impact. The problem-focused intervention was designed to promote objective information regarding the surgical procedure and of the physiological sensations it produced. Emotion-focused coping strategies include affective regulation through relaxation, eating, accepting sympathy, and attention redirection. Specific emotion-focused intervention activities included relaxation techniques, calming emotion-focused statements such as "I will just relax and soon it will be over", and attention redirection (i.e., imagining a more pleasant situation).

Results of the study indicated that surgery was perceived as stressful. Furthermore, the emotion-focused procedure was more successful for subjects with a low preference for information, while the problem-focused intervention was more successful for subjects with a high preference for information. Interventions that provide information are likely to be more successful for individuals who have a preference for obtaining information to deal with situations in the workplace. Similarly, interventions that emphasize relaxation, visual imagery and diverted concentration are likely to be more successful with individuals who have a strong emotion-based focus. Furthermore, interventions that combine information with emotion-based strategies would appeal to people with either preference. These results
indicate that there is merit in matching individual characteristics with intervention formats.

**Stress Management Interventions**

A general framework for stress management interventions was presented in Chapter I and will not be repeated here. However, a variety of intervention types have been used over the last ten years and these are the basis of this review. The first topic of consideration is marketing the program. Marketing involves not only notifying the target population about the availability of the program, but other criteria as well. Linnan, Harden, Bucknam and Carleton (1990) report the marketing experience shared in the Pawtucket Heart Health Program. Marketing was defined as an exchange process between two or more parties. Corporations and the employees involved can provide valuable input related to intervention content, design and format. Personal barriers and solutions can be identified (such as scheduling workshops at times that maximize attendance or providing packages that can be completed on an individual basis). Conducting an interest assessment provides researchers with information on needs and probable participation. Once the necessary information has been acquired, a plan can be developed and implemented. Resources can be identified and secured (meeting place, equipment, handouts, personnel, etc.). Then the program can be promoted to the target audience. This process identifies and reduces barriers while enlisting interest and support for the intervention, thus maximizing the effect of intervention strategies.
Intervention strategies are techniques designed to facilitate behavior change. Bellingham and Isham (1990) identified five levels of activity common to health promotion programs in the workplace: 1) awareness, 2) motivation, 3) behavior change opportunities, 3) maintenance, and 4) culture change. Awareness was promoted through newsletters, information brochures, films and lectures. Health promotion seminars and testing opportunities were used to increase Motivation. Behavior change opportunities were offered through a variety of skill based programs to reduce risks and enhance health (i.e., stress management interventions), and maintenance was accomplished through support groups, follow-up sessions, fitness centers, quiet rooms, and relapse prevention programs. A systematic process was implemented to impact the norms and values in the workplace (culture change) through team building, interpersonal communication, creative thinking, planning and a reward system to reinforce positive health practices. Findings indicated that the most successful programs employed a variety of interventions as components of their awareness, motivation and behavior change strategies. Research is still needed to understand the impact of organizational culture on individual efforts to maintain desires health related behaviors.

A variety of intervention strategies have been used successfully over the last ten years. Tallant, Rose and Tolman (1989) conducted a group stress management training program designed to increase subject awareness of stress-producing situations, take action to modify situations whenever possible, and to reduce subject perception
of stressful events. The short-term, structured, group intervention included relaxation (systematic relaxation techniques, meditation, and breathing), cognitive appraisal (evaluation of the stressor, and one's ability to cope), and cognitive restructuring. Cognitive restructuring was used modify inappropriate appraisals. For example, subjects learned to replace self-destructive statements (I can’t do anything right) with positive statements (anyone can make mistakes).

Similar techniques have been used successfully by other researchers. Ivancevich, Matteson, Freedman and Phillips (1990) identified 7 major stress management intervention techniques. Meditation is a technique which involves focusing the mind inward (usually through repetition of a sound or word) to achieve a deep state of relaxation. Bio-feedback assisted relaxation is another technique which provides subjects with auditory sounds (galvanic skin response indicator, blood pressure, and eeg brain wave sensors) that indicate the level of relaxation. Other relaxation exercises include progressive relaxation (systematically tensing and relaxing muscle groups), autogenic training (imagining warm relaxing energy flowing through the body), and visual imagery (imagining the most beautiful place you can) are types of sensory redirection (focusing attention away from the negative stimulus).

Cognitive restructuring is a technique which teaches subjects to look at situations in a different way (to reduce the negative impact of the stressor). For example, if someone gets angry because a co-worker didn’t complete their part of an assignment, the cognitive restructuring technique would focus on potentially harmful
health risks associated with anger (high blood pressure, muscle tension, headaches, ulcers) and remind the individual to focus on her/his own responsibility (since we can't really understand or change another person). Another stress management technique involves modification of the stressor through work redesign (changing the physical environment, task, person/machine interface, or communicating with coworkers).

**Summary**

This chapter reviewed the literature related to the unique aspects of this research project. Each element of the model proposed for this research was explored. Non-work stressors include lack of social support and cultural attitudes such as affiliation and attribution to self of responsibility for good and bad events. Cultural attitudes, beliefs and values affect appraisal of stressors and response outcomes, and, thus warrant attention when designing stress management interventions. The effect of cultural difference is compounded when more than two cultures are involved. Lifestyle practices (negative behaviors such as substance abuse, excessive expression of anger), life cycle changes (mid-life crisis), and changes in the family cycle (newborn infant in the home, children leaving the home to start their own family, etc.) create stressful demands on the individual. Minor hassles such as ongoing concerns about finances, physical appearance and home maintenance can also contribute to the impact of worksite stressors.
Worksite stressors include factors related to organizational climate, relationships, personal growth, work design and the job/person interface. The presence of excessive amounts of stressors can affect health status. Across the nation, the majority of workers perceive some degree of stress in their life, and they attribute negative health consequences to stress. Certain factors can have a buffering effect which limits the negative impact of stressors. Some of these buffers include positive lifestyle habits like, eating a balanced diet low in cholesterol, exercising daily, and practicing stress management techniques (relaxation, meditation, visual imagery, etc.). Other buffers may include religious beliefs, social support, and coping mechanisms.

Perceived value of interventions, self-efficacy, causal attribution and temperament type are individual characteristics that influence the effectiveness of any stress management intervention. Finally, interventions are more effective when they 1) are marketed through open communication to the administration and the employees; 2) present relevant information logically, in a step-by-step manner; 3) include high information and emotion-centered content (visual imagery, relaxation and meditation); and 4) match interventions to individual characteristics including preferred format and cultural style.

Review of related literature indicates that stress is a significant employee health risk factor and that it is necessary to measure potential sources of stress and stress response outcomes in order to determine effectiveness of stress management interventions. Although many occupational stress management programs have been
attempted, none have included readiness for change, attribution pattern, temperament type, and matching according to preferred format. This review supports the value of conducting research designed to measure the effectiveness of matching employee characteristics with intervention strategies.
CHAPTER III: METHODOLOGY

This chapter presents the methodology involved in the research project. Information is provided on the population and sampling procedures, variables, the pilot test, assumptions, the stress management program and data analysis. This study involved applied research in the "real world of work". Therefore, unlike a controlled laboratory or classroom situation, a naturalistic worksite design was employed, attrition was expected, and cell size was often irregular.

Population

Hawaiian Electric Company employs approximately 4,000 employees on all of the major Hawaiian islands. The majority of employees are located on the island of Oahu. One of the major sites on Oahu is the Ward Street Facility. There are 295 merit (White collar) employees working in engineering-related positions at the Ward Street Facility. The merit employees who are employed at the HECO Ward street facility perform tasks involving technical functions. They direct the work of others and their performance evaluations are based on "substance" or "process" rather than by specific products or tangible outcomes. In contrast, the blue-collar, bargaining unit employees at the HECO Ward Street Facility (N=240) are less independent, receive orders from others, and are evaluated in terms of production output.

Hawaiian Electric Company (HECO) has experienced recent changes in workload and organizational structure which have created stressful conditions that compound the mental demands that workers continue to experience. Increased stress
may relate to productivity losses and rising costs. Several employees recently have approached the director of Human Relations to inquire about making stress-related medical and worker compensation claims.

The Ward street facility was selected for this stress management project by the researcher and the HECO administrative staff because of the many stress-related comments that have been elicited by this population. Another factor is that current research has identified elevated risks of brain cancer for men employed in engineering (Brownson, Reif, Chang and Davis, 1990). A further selection criterion was that the facility is isolated from other employees. Such isolation offers a natural control for contamination bias since participants would have only limited contact with non-participants and exposure factors from other environments that might have an effect on results. There is a conference room within walking distance that allows workshop attendance with a minimum of time lost due to traveling from work to the workshop location. Finally, because all of the employees in this facility worked in engineering-related fields, the project was focused specifically on the needs of this population.

Sampling

This study employs both a purposive sampling technique (since all employees in the department were contacted) and an assigned technique (volunteers were assigned to various types of intervention based on stated format preference). Therefore, the population includes all HECO merit employees at the Ward Street facility (N=295). The research sample is comprised of all HECO merit employees at
the Ward Street Facility who completed the initial survey (n=165). This sample size
is sufficient to insure stability of correlations (Bennett and Bowers, 1978). This study
was designed in an attempt to gain an understanding of the effects of attributional
style (especially the tendency to attribute responsibility for problems and solutions) on
participation. The sample appears to be representative of the Ward Street population
and demographic data reveals no demonstrative bias.

The study began by distributing surveys to 295 merit employees at the Ward
street facility. Employees who returned the completed inventory battery (n=165),
referred to as survey respondents, comprised fifty-six percent of the original
population. Sixty of those respondents (36%) indicated that they would be willing to
participate in a stress management program, and they were assigned to one of the four
intervention groups. Equal numbers of respondents (who agreed to participate in the
stress management intervention) were assigned to each of the four groups, based on
their original preference.

Subjects were assigned to groups according to an exact match (15), a partial
match (n=15) and no match (n=15) and a control group with no intervention
(n=22). Subjects assigned to the independent format group were given a workbook
on stress management (high information) and an audio tape (emotion based) designed
to facilitate a deep state of relaxation (visual imagery, autogenic training, progressive
relaxation, cognitive restructuring and meditation). Subjects assigned to the group
format sessions were presented with all of the information contained in the workbook

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through lecture, facilitated by group discussions and activities, and listened to the tape during the sessions, but did not receive a copy (of the workbook or the tape) for their home use. Subjects in the combination group experienced the same conditions as the group session, and they received a workbook and tape for their home use. The control group received no materials and were told that they could participate after the first group completed the training (in two months).

Variables

This research project was designed to identify sources of stress, the impact of stress (response outcomes), the effect of employee characteristics (including descriptive data, preferred format, readiness for change, temperament type, and attribution pattern) and the effectiveness of participation in an attributional stress management intervention. Items were classified according to the following categories: 1) independent; 2) dependent; and, 3) associated variables. Each category will be discussed in this section.

Independent Variables (IV)

The independent variables (IV) included in this research project are preferred format, readiness for behavioral change, and temperament type. The operational definition for each type of variable is presented below along with the specific Occupational Stress Inventory (OSI) survey items involved.

Demographic factors measured in this study included ethnicity (Appendix A, page 157 item 6), sex, age, height, weight, marital status, educational level, type of
religious belief and importance of that belief; and lifestyle (Appendix A, pages 159-161, items 1-20).

Preferred format was a variable in this study. Survey respondents indicated a preference for one of the stress management interventions: 1) individual format (a book and tape that can be used independently); 2) a group setting (without providing participants with a book and tape); and 3) a combination format (including the group sessions as well as providing participants with a book and relaxation tape for their use at home). Similar to the Baldwin and Magjuka study (1991) which was discussed in Chapter I, subjects who indicated an interest in participating in the stress management intervention were assigned to an intervention group according to a) exact match with preferred format (n=15); b) partial match (n=15); c) no match (n=15); and, d) subjects in the control group had no intervention (n=22).

Readiness for behavioral change was measured by two survey items: 1) How valuable do you feel most stress management programs are? (Appendix A, page 161, item 23). 2) If your employer offers a stress management program designed specially for you, would you attend? (Appendix A, page 161, item 24).

Temperament type was measured by the original Keirsey Bates Temperament Sorter test form obtained directly from the test publisher.
Dependent Variables (DV)

The dependent variables in this study are participation in the attribution-based stress management program, and attribution as measured by the attribution inventory designed for this study.

**Participation** is defined as completion of one or more levels of this research project. Subject participation and attrition was calculated by simply listing the number of subjects who completed each level. The first measurement of participation was completion of the Occupational Stress Inventory (OSI), the second level was the subject's original intent to participate. Intent to participate was measured by response to the OSI item which asked if they would participate in a stress management course designed by their employer (Appendix A, page 161, item 24). The third level of participation involved attendance at the first session of the Stress Management Intervention (SMI) as measured by attendance and completion of the SMI pre-test. The fourth level of participation involved attendance at the remaining sessions. The fifth level was measured by completion of the SMI post-test. The sixth level was measured by completion of the Attribution Inventory which was distributed to all SMP participants at their office after the final SMP session.

**Attribution** was measured by the Attribution Pattern Assessment Inventory that was developed for this study. In order to standardize the topics for consideration and control for potential biases, critical Incident scenarios were constructed for each occupational stress risk factor. Initial emphasis focused on maintaining hedonic
relevance by designing critical incidents specifically for the research population (electrical engineers). Scenarios were developed for each occupational risk factor in order to assess attributions related to employees at HECO. The scenarios were evaluated by a committee of HECO personnel (Human Resources, Engineering Administration, and Line staff) to insure mundane realism, appropriateness, and ease of understanding. The incidents were set up to control for status (line staff and managers) and sex role stereotypes (see Appendix D, pages 2, 4, 6, 8, 10, 12, 14 and 16) involved in the critical incident scenarios comprising the attribution inventory.

The final version of the Attribution Pattern Assessment Inventory included eight scenarios focusing on common problems relating to the field of engineering. Subjects were asked to read the scenario while imagining that they were the main character. Attribution scores were determined by averaging subject ratings of ordered category scales (Dunn-Rankin, 1983) for all of the eight scenarios. Subjects were asked to respond to six statements about the problem, six statements about the solution, and one question regarding whether the main character was responsible for the problem, the solution, both (problem and solution) or neither (problem or solution). The six potential sources of attribution relevant to the proposed study (Norcross, Prochaska, and Hambrecht, 1983) were ordered from highest responsibility of attribution to self to lowest attribution of responsibility to self including 1) the beliefs and actions of the main character (MC=1); 2) the beliefs and actions of
coworkers (Co=2); 3) the supervisor’s thoughts and actions (S=3); 4) the main character’s family (Fam=4); 5) factors controlled by the firm (F=5); and uncontrollable forces such as luck, providence, and spiritual intervention (UF=6).

For each scenario, subjects were asked to make judgements about attribution of responsibility for each potential source of attribution indicating responsibility for the problem and for the solution. Subjects were also asked to indicate the strength of their ranking (using a five point scale). Subjects responded to each item by filling in a circle according to how strongly they believed each of the six potential sources were responsible for the problem or the solution. Subject responses were ranked according to the strength of the belief. For example, if a subject, after reading a story about a worker named Gemma, filled in the circle below strongly agree in response to the statement The problems described above were primarily due to Gemma’s Supervisor, the score would be 4. However, if the response was strongly disagree the score would be 0. In a similar fashion, if a subject filled in the circle below strongly agree in response to the statement The best solutions to the problems described above include (those directed by) Gemma’s Supervisor gets stronger, the score would be 4. Responses were averaged for each potential source of responsibility for the problem and the solution, and for the item regarding the main character’s responsibility for the problem, the solution, both, or none.

To preview some of the results presented in Chapter IV, test-reliability for the initial pilot test sample (n=25) was attribution of responsibility for the problem
(r=.93), and for the solution (r=.78). Following analysis of the pilot test results, an additional item was added to each scenario to obtain an overall score of attribution related to the main character. This item (ranked according to attribution to self from high to low) asked respondents to indicate which of the following items described how responsible they felt the main character was for: 1) for the problem and the solution (high attribution to self); 2) for the solution only; 3) for the problem only; or, 4) for neither the problem or the solution (low attribution to self).

Pilot test results indicated that attribution of responsibility for problems in the workplace was perceived as being caused primarily by the workplace environment and the actions of others. Survey respondents tended to perceive the secondary cause as themselves (since it is assumed that they followed the directions and imagined themselves as the main character). With respect to solutions, respondents identified a shared responsibility between coworkers, supervisors and themselves; and, the firm, consultants and family members. The clustering of factors supports the concept that the focus of attribution lies on a continuum from inner (self) to outer (the firm, consultants, uncontrollable forces, etc.) factors related to problems in the workplace.

**Associated Variables**

Since this was an actual worksite research study, not a laboratory experiment which allowed for strict control of variables, a wide range of variables associated with the stress process were studied. The associated variables involved in this study impact health status and relate to other projects involving stress. The effect of these
variables was measured to determine any association, since many are considered to be related to occupational stress. The associated variables include worksite stressors, non-work stressors, stress response outcomes, and buffers.

Stressors at work and in the non-work environment were identified by the appropriate items on the National Institute for Occupational Safety and Health (NIOSH) General Stress Inventory (GSI). Each category (see Appendix A for actual survey) is listed below including the survey items and scoring procedures:

**Work Stressors:**
- Physical Environment: Page 151, 1a-h. (average- reverse score a, b, g, h).
- Problems at work: Page 151, 2a-f. (average- reverse score a,e,f).
- Mental Demands: Page 151, 3a-e. (average- reverse score a, b, c).
- Work Hazards: Page 151, 4-8. (average).
- Workload: Page 152, 1a-d, 2a-c, 3a-d. (average). Workload: Page 152, 1a-d, 2a-c, 3a-d. (average).
- Variance in Workload: Page 152, items 3e-g. (average).
- Responsibility for others: Page 152, items 1e-h. (average).
- Skill Underutilization: Page 152, items 3h-j. (average- reverse all items).
- Perceived Job Control: Page 153, items 1a-p. (average).
- Role Ambiguity: Page 153, 2a,b,d,f,i,m. (average- reverse score all items).
- Role Conflict: Page 153, 2c,e,g,h,j,k,l,n.(average).
- Job Future: Page 154, 5a-e. (average- reverse score all items).
- Intracogroup Job Conflict: Page 156, 1a-h. (average- reverse score a,e,g,h).
- Intergroup Conflict: Page 156, 1i-p. (average- reverse score j,l,n).
- Type A Traits: Page 158, 1a-t. (average- reverse score items c,f,h,i,k,l,n,o,p,r)
- Low Self Esteem: Page 158, 2a-j. (average- reverse Score b,c,f,g,i).
- Negative Lifestyle Habits

**Non-Work Stressors:** Non-Work Activities: Page 158, 3-9 (average).

**Buffers:**
- Job satisfaction: Page 154, 5f, 6 and 7. (average- reverse score all items).
- Social Support: Page 156, 2,3,4,5. (average- a, b, c).
- Practicing stress management: Page 161, items 21 and 22.
The items related to **Stress Response Outcomes** (from the NIOSH GSI) are listed on the following page with the items which measure them and scoring procedures.

3. Other Health Information: Page 157, 4a-t, 5a-g. (average).

Subject responses in all categories were calculated according to the standards set by the NIOSH scoring procedures. Examination of mean scores identified the stressors for this population. The range of scores varied for each source of stress, with higher scores indicating increased presence of the source of stress. The majority of stressors were measured according to subject responses to a 5 point scale (see appendix B pages 151-161) and, therefore, have a 1-5 range. Physical Environment and Non-work responsibilities had a range of 1-2 with only True/False response options. Mental demands and work hazards both had a 1-4 point range.

**Assumptions**

There were several types of assumptions involved in this research study. The first group of assumptions related to temperament type. For example, while generalizations cannot be made regarding the extravert/introvert dimension, feeling types (F) prefer cooperation (see Figure 7, page 62) and group formats. Another assumption about temperament type is based on the distribution of temperament types in the sample of engineers (for a more detailed discussion of the MBTI data bank see page 58), it was assumed that there would be a prevalence of individuals who make
judgements (J) by thinking (T) about information gathered through the senses (S). Consequently, the stress management workshop was designed to be appropriate for this population. These types tend to be dutiful, diligent and socially conscious. Therefore, marketing of the program and the content of the interventions reflected a style of presentation that appeals to this population including. The target population was involved in the design of the interventions, and information in the scenarios was presented in a context relevant to engineering problems that these employees found to be highly relevant. Information in the stress management interventions was also presented in a logical, step-by-step manner. Emotion-based techniques were also incorporated in order to redirect the analytical focus inward. Finally, the course content was clearly communicated to the supervisors and opportunities for self-directed learning (book and tape) were included in the design format.

The second major assumption related to the fact that this study was conducted in a real world setting, rather than a controlled environment such as a college classroom where students were required to participate in order to receive a good grade. The subjects in this research sample were all full-time workers with families and other responsibilities in the community. Therefore, limited participation was expected for four basic reasons. (a) It has already been established that there is a high workload demand at HECO which severely limited the amount of free time for completing this survey while at work, and most people have other activities planned in their off-work hours. (b) The survey is very lengthy, requires a great deal of
concentration, and takes approximately 2 hours to complete. Many individuals did not want to devote the time and commitment to complete the survey instrument. (e) The compensatory nature of this research provided no incentives for participation. Subjects were given complete freedom to participate or not. (d) One fourth of the subjects were assigned to intervention groups which were inappropriate; one fourth were appropriately matched with their preferred format; one fourth were assigned to the combination which offered a partial match; and, one fourth were assigned to the control group with no intervention. (e) Research on readiness for behavioral change indicates that 1-12% of the population is actually ready to participate, even though as many as 80% could indicate that they would participate. Therefore, it was estimated that approximately one half (n=150) of the initial population would complete the survey. Of those who completed the survey, it was estimated that approximately half would choose to participate (n=80), and that 35 (12%) would complete the project.

The third major assumption related to the multicultural workforce involved in this study. When conducting research on an island (such as Oahu) with a multicultural population employed in the engineering field (such as the research proposed in this writing) certain assumptions about culture can be made. For example, Hawaiian Electric began as a caring, family-orientated firm (referred to by the local population as a "Kamaaina Firm") noted for providing excellent benefits. Within the last ten years the company expanded considerably, and was reorganized. Workers were confronted with a very high workload demand in an environment with
a history of supporting traditional values. For example, the company has established a record of providing many services (health care, competitive salaries, promotions, and investment opportunities) to the employees. This created a condition of uncertainty avoidance since it would be difficult for employees to find comparable employment opportunities elsewhere. Therefore, employees feel obligated to work as hard as is required without questioning authority.

**Procedure**

This study involved a prospective design. The stress management intervention was marketed through interactions with administrative and supervisory personnel. Confidentiality, informed consent, and voluntary participation were guaranteed. Due to the fact that this research involved human subjects and sensitive subject matter, authorization to conduct the research was obtained from HECO prior to beginning this study. Employees in the department were asked to complete the initial survey which included the NIOSH General Stress Inventory, the Keirsey-Bates Temperament Sorter, demographic factors, and the Attribution Inventory (Appendix A). Subjects were asked their training model preference, perceived need for and value of stress management training, and intent to enroll in the program.

The Attribution Inventory (Appendix A, pages 162-169) involved an equal number of items so as to control for sexual stereotypes, job role and status, and risk factor. The scenarios included situations that were realistic and appropriate, as verified by the target population, and they were constructed with an equal distribution
of men and women in the various roles, and ethnic names (Hawaiian, Japanese, and Caucasian) were used for all characters. To control for any presentation bias, subjects were randomly assigned regarding order of presentation for the critical incidents in each topical area.

All subjects who indicated a desire to participate in the stress management program were given a pre-test to determine knowledge and practice of stress management techniques. A post-test was given to participants following the intervention to assess knowledge and practice of stress management techniques. In order to provide an equal opportunity for all subjects to receive training according to their original format preference, all subjects were given an opportunity to participate in the other types of training after completion of the project.

The Stress Management Program

Concordant with current research which indicates that programs based on the compensatory model have a high probability that participants will achieve program goals (Brickman, 1982), a totally voluntary stress management intervention was designed for this study without coercion or rewards. Information was presented in two different ways: Through problem-focused information and emotion focused techniques.

Problem focused information was provided in writing (workbook and handouts) and through lecture on stressors, stress response outcomes, and stress management techniques. The information provided (see Appendix B) included step-
by-step analysis of demands in the workplace and non-work demands; mental and physical reactions; cognitive appraisal of demands and ways to restructure those appraisals; techniques for redirecting the focus away from the demand (visual imagery, autogenic training, relaxation and meditation); and positive lifestyle behaviors associated with improved health status. Emotion-focused techniques (progressive relaxation techniques, visual imagery, autogenic training, and meditation) were provided through video and auditory tapes.

Subjects assigned to the independent format group were given a workbook on stress management (high information) and an audio tape (emotion based) designed to facilitate a deep state of relaxation (visual imagery, autogenic training, progressive relaxation, cognitive restructuring and meditation). Subjects assigned to the group format sessions were presented with all of the information contained in the workbook through lecture, facilitated by group discussions and activities, and listened to the tape during the sessions, but did not receive a copy (of the workbook or the tape) for their home use. Subjects in the combination group experienced the same conditions as the group session, and they received a workbook and tape for their home use. The control group received no materials and were told that they could participate after the first group completed the training (in two months).

Group discussion was structured to facilitate active participation while encouraging attribution of responsibility to self rather than to outer forces and factors. Another technique was used called cognitive restructuring which is an effective
method for reducing occupational stress involving replacing negative cognitive appraisals with more positive ones (Ganster et al., 1982). For example, if an individual appraises the cause of problems at work to center around a feeling like: "I'm stupid and can't do anything right". That appraisal could be restructured in the following way: "I can't change other people or control what happens in the future. If I try my best and am willing to learn, then my conscience is clear and I can find peace within myself". Restructuring is a useful technique when combined with the process of identifying and modifying controllable elements in the work environment.

The overall goals of the program were to increase knowledge about the stress process, reduce the negative impact of stress-producing factors, and to increase subject attribution of responsibility to self for solutions to workplace stress-related problems. The Stress Management Intervention (SMI) was two months in duration. All subjects were given a pre-test at the beginning of the time period, and a post-test at the end of the period. The Group and Group Workbook/Tape subjects were given an opportunity to participate in 4 sessions (2 hours long) spread out evenly over the two month period. The underlying intention of the sessions was to reinforce attribution to self for responsibility of stress management rather than attribution to others. This was accomplished by encouraging participants 1) to share about their perceptions and reactions, focusing their attention inward; 2) to refrain from blaming others for problems. Temperament type training was used to facilitate understanding about individual differences and reduce inappropriate expectations, thereby reducing
the need to take other people's reactions personally and reinforcing the concept that we have limited control over other people, or what happens around us, but we can control our reaction to what happens. Emphasis was placed on doing one's best, moment to moment, and erasing everything at the end of the day (just hang up your job on the handle when you go out the door), clear your mind so you can devote your full attention to your family (friends, etc.) when you go home instead of thinking about work.

Analysis

In order to test the stated hypotheses, subject responses to all survey items were analyzed, and subject participation in the SMI was recorded. All variables (i.e., descriptive, independent, dependent and associated) were identified through subject responses to the Occupational Stress Inventory (as described previously in this chapter). The NIOSH General Stress Inventory was used to identify stressors and stress response outcomes specific to this population. Factor analysis of each multi-item scale (using both principal component and principal factor methods) was conducted to determine if those items were reliable and comparable to standard construction formats.

Attribution pattern was determined by subject responses to the attribution inventory (using factor analysis with principal component and principal factor rotation). Subject responses were averaged (across all eight scenarios) to obtain scores for each of the six sources of responsibility for the problem, the solution, and
for the main character (responsibility for the just the problem, the problem and the solution, just the solution or both the problem and the solution).

The Keirsey Bates inventory scoring method was used to determine temperament type. Temperament distribution was analyzed in relation to the independent and dependent variables. Correlational and Regression analysis was conducted for all variables for each major temperament type.

**Hypothesis Testing**

The first hypothesis states that there will be a significant difference in preferred training format related to employee characteristics including temperament type, readiness for behavioral change, and attribution pattern. This analysis involved determining the distribution of each variable (preferred training format, readiness for behavioral change and attribution pattern) and calculating a correlation between all three variables).

The use of correlation and regression analysis is justified. Although the assumptions of simple linear regression have not been satisfied (Harnett and Murphy, 1986), in that the variables are assumed to be presentable in the form of a ratio, it is considered to be a conservative and common practice to use regression analysis when the ordinal data is expressed in terms of varying degrees rather than strict numerical functions (Cognitive Development, Inc., 1990).

The second hypothesis states that there will be significant differences in participation in the Attribution Stress Management Intervention related to employee
characteristics including temperament type, perceived need for and value of training, preferred format and attribution pattern. Procedures identical to the first was used to test it.

The third hypothesis states that participation in an employer sponsored stress management program does change attribution in the direction specified by program goals (toward an inward locus of control). Using the same format described above, the scores were analyzed according to temperament type, and a 5% significance level was established.

The fourth hypothesis was exploratory in nature and designed to identify predictors of format preference and participation. This analysis was conducted by reviewing all of the findings related to format preference and participation including aspects of the variables not previously analyzed, particularly those related to temperament type and culture.
CHAPTER IV: FINDINGS

This chapter reports the findings of the study which was conducted at the Hawaiian Electric Company (HECO) Ward Street facility in Honolulu, Hawaii. The purpose of this study was to design, implement and evaluate an employer-sponsored stress management intervention that was sensitive to the individual characteristics manifest by the target population. Findings presented include descriptive data, associated variables, and hypotheses testing. The four hypotheses stated for investigation are as follows:

1. There will be significant differences in preferred training format related to employee characteristics including temperament type, readiness for behavioral change, and attribution pattern.

2. There will be a significant difference in participation in the Attribution Stress Management Program related to employee characteristics including temperament type, readiness for behavioral change, preferred format, and attribution pattern.

3. Participation in the employer sponsored attribution stress management program will change attribution in the direction stipulated by the program goals.

4. Predictors of format preference and participation will be identified.

Results

Initial data was collected through a battery of survey instruments which included the National Institute of Occupational Safety and Health (NIOSH) General Stress Inventory (GSI); the Keirsey-Bates Temperament Type Sorter, and the Attribution Pattern Assessment Inventory which was designed for this study. Surveys
were distributed to all white-collar, non-union, "merit" employees (N=295) in engineering-related occupations. Fifty-six percent (n=165) of the population returned the survey. The survey respondents (n=165) comprise the research sample.

Descriptive Statistics

Descriptive data on age, ethnicity, and sex was collected for the entire population of HECO merit employees (N=295) through the survey battery and by examining company records to collect information on employees who did not complete the initial survey. Since some respondents did not complete all items, the totals are sometimes less than the sample size (n=165). Population parameters and sample statistics are presented in Table 3 by ethnic group.

Table 3

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>SAMPLE</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Proportion</td>
</tr>
<tr>
<td>CAUCASIAN</td>
<td>45</td>
<td>.29</td>
</tr>
<tr>
<td>CHINESE</td>
<td>25</td>
<td>.16</td>
</tr>
<tr>
<td>HAWAIIAN</td>
<td>10</td>
<td>.06</td>
</tr>
<tr>
<td>JAPANESE</td>
<td>62</td>
<td>.40</td>
</tr>
<tr>
<td>OTHER</td>
<td>15</td>
<td>.09</td>
</tr>
<tr>
<td>TOTAL</td>
<td>157</td>
<td>1.00</td>
</tr>
</tbody>
</table>

All ethnic groups which comprised less than three percent of the population (Black, Filipino, Hispanic, and Pacific Islander) were included in the "OTHER"
category. Using the proportions listed in Table 3, a Goodness of Fit Test was calculated to determine if the sample was a reasonable estimate of the population with respect to ethnicity. The critical value of $X^2_{.95}$ with 4 degrees of freedom was 9.487, and the chi-square statistic was 4.295 ($P=.37$). Test results indicate that there is no significant difference between the sample and the population with respect to the distribution of ethnic groups. Proportions for the sample and the population were calculated for males and females in each age group and the results are presented in Table 4.

### Table 4

Age and Sex of the Population (N=295) and Sample (n=145) Including Number and Percent

<table>
<thead>
<tr>
<th>AGE</th>
<th>SAMPLE M</th>
<th>SAMPLE F</th>
<th>SAMPLE SUM</th>
<th>%</th>
<th>POPULATION M</th>
<th>POPULATION F</th>
<th>POPULATION SUM</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>18</td>
<td>11</td>
<td>29</td>
<td>20</td>
<td>37</td>
<td>19</td>
<td>56</td>
<td>19</td>
</tr>
<tr>
<td>31-40</td>
<td>17</td>
<td>9</td>
<td>26</td>
<td>18</td>
<td>47</td>
<td>15</td>
<td>62</td>
<td>21</td>
</tr>
<tr>
<td>41-50</td>
<td>47</td>
<td>16</td>
<td>63</td>
<td>43</td>
<td>91</td>
<td>21</td>
<td>112</td>
<td>38</td>
</tr>
<tr>
<td>51-&gt;</td>
<td>23</td>
<td>4</td>
<td>27</td>
<td>19</td>
<td>58</td>
<td>7</td>
<td>65</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>105</td>
<td>40</td>
<td>145</td>
<td>100</td>
<td>233</td>
<td>62</td>
<td>295</td>
<td>100</td>
</tr>
</tbody>
</table>

Data presented in Table 4 was analyzed using the Goodness of Fit test. Proportions for each age group were compared between the sample and the population to derive $X^2_{.95}$ values with 3 degrees of freedom for males (1.04), females (.23) and the combined totals (3.16) to determine if the sample was a good estimate of the population. The chi-square test statistic was less than the critical value of $X^2_{.95}$ with 3
degrees of freedom (7.85). Test results indicate that there was no significant difference between the sample and the population with respect to age and sex.

**Descriptive Data on the Sample**

Subject responses to the survey battery identified descriptive data about the sample (n=165) that provides a context in which to view the findings of this research study. Descriptive data to be discussed in this section includes: a) marital status and educational level; b) number of years employed with the company and number of years in the current position; and, c) work schedule.

Table 5 presents the marital status and educational levels of the sample.

<table>
<thead>
<tr>
<th>Education Degree</th>
<th>n</th>
<th>%</th>
<th>Marital Status</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>40</td>
<td>24.3</td>
<td>Married</td>
<td>111</td>
<td>67.3</td>
</tr>
<tr>
<td>Associate</td>
<td>18</td>
<td>10.9</td>
<td>Separated</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Bachelors</td>
<td>83</td>
<td>50.3</td>
<td>Divorced</td>
<td>12</td>
<td>7.3</td>
</tr>
<tr>
<td>Masters</td>
<td>23</td>
<td>13.9</td>
<td>Widowed</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>0.6</td>
<td>Single</td>
<td>37</td>
<td>22.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>165</td>
<td>100.0</td>
<td><strong>Total</strong></td>
<td>165</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Data on the number of years employed with the company and in the current position (Table 6) was gathered since employees in the first year of employment are at the highest risk for occupational injuries (Leigh, 1985). Analysis of company
records for length of employment with the company and length of employment in the current position indicate that over half of the sample population has been in the current position 1-5 years.

Table 6

Years Employed and Years in Current Position for the Sample (n=165)

<table>
<thead>
<tr>
<th>Years/HECO</th>
<th>n</th>
<th>%</th>
<th>Yrs/Position</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>53</td>
<td>32.1</td>
<td>1-5</td>
<td>91</td>
<td>55.2</td>
</tr>
<tr>
<td>6-10</td>
<td>11</td>
<td>6.7</td>
<td>6-10</td>
<td>19</td>
<td>11.5</td>
</tr>
<tr>
<td>11-15</td>
<td>10</td>
<td>6.1</td>
<td>11-15</td>
<td>10</td>
<td>6.1</td>
</tr>
<tr>
<td>16-20</td>
<td>30</td>
<td>18.1</td>
<td>16-20</td>
<td>7</td>
<td>4.2</td>
</tr>
<tr>
<td>21-25</td>
<td>17</td>
<td>10.3</td>
<td>21-25</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>26-30</td>
<td>26</td>
<td>15.8</td>
<td>26-30</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Missing</td>
<td>18</td>
<td>10.9</td>
<td>Missing</td>
<td>33</td>
<td>20.0</td>
</tr>
<tr>
<td>Total</td>
<td>165</td>
<td>100.0</td>
<td>Total</td>
<td>165</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Several items included in the survey battery related to work schedule. The majority of the sample (n=157) were assigned to work on a permanent, daytime schedule. Five employees in the sample reported a rotating shift, and four did not respond to this item. Ninety-eight percent (n=161) of the sample (n=165) was assigned to work on a full-time basis for at least forty hours per week. Eight-five percent of the sample (n=140) reported working from one to twenty hours of overtime each week. Eight percent of the sample (n=14) reported working at an additional job between five and twenty hours per week.

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Discussion of Descriptive Data

A comparison between population parameters and sample statistics, presented in Table 3 and Table 4, indicated that the sample was a reasonable estimate of the population with respect to age, sex and ethnicity. Therefore, generalizations made from the findings for the sample data can be applied to the general population of merit employees at the HECO Ward Street Facility.

As indicated in Table 5, it is not particularly surprising to note that the subjects are highly educated since they are by definition merit employees in engineering-related positions. Furthermore, the majority of the respondents were married, indicating additional non-work responsibilities as well as a potential source of social support. Approximately 10% of the sample were separated, divorced or widowed which are factors associated with increased levels of stress. Many of the sample reported spending time at work in excess of the regular forty hour work week which reduced the amount of time available for other activities involving family, friends and community organizations.

Associated Variables

The associated variables included in this study were non-work and worksite stressors, stress response outcomes, and buffers. The survey items were arranged so subjects could respond to more than one item in each category. Consequently, totals for some categories of variables exceed the sample size (n=165). Findings related to each variable will be discussed in this section.
Eighty-seven percent (n=143) of the sample (n=165) reported demands from non-work responsibilities, as measured by the National Institute for Occupational Safety and Health General Stress Inventory (NIOSH GSI), which was the most common source of stress experienced by the sample population. This category included 1) being the major caretaker for an elderly person; 2) working at an additional job; 3) attending school; 4) having primary responsibility for the care of children; 5) community involvement; 6) housecleaning; and 7) children at home.

The worksite stressors (measured by the NIOSH GSI) experienced most often by the sample included mental demands (n=130); quantitative workload (n=70); type A traits (n=55); lack of perceived control (n=52); and, role conflict (n=50).

The stress response outcomes measured by the NIOSH GSI included three subcategories: 1) health conditions, 2) somatic complaints, and 3) negative lifestyle behaviors. Subjects responded to as many items as they experienced, therefore the totals are greater than 165 in some cases. Each sub-category will be discussed below.

There were 24 possible health conditions for the sample to select from, and no one added any additional conditions in the space provided. Fifty-eight percent of the sample (n=96) reported that they did not experience any of the health conditions listed. Twenty-three percent (n=38) reported one condition, and nineteen percent (n=31) reported two or more with a mean score for the sample of .7 conditions reported. Subjects reported experiencing 18 conditions including high blood pressure (n=34); back problems (n=20); kidney or bladder problems (n=10); arthritis (n=8);
gastritis (n=6); heart disease (n=5); insomnia (n=5); lung problems (n=5); emotional problems (n=4); thyroid problems (n=4); asthma (n=3); cancer (n=3); diabetes (n=3); paralysis, tremor, or shaking (n=1); gallbladder (n=1); glaucoma (n=1); epilepsy (n=1); and, hernia (n=1). The number of health conditions reported is presented in Table 7 by ethnicity.

Table 7

<table>
<thead>
<tr>
<th>Health Conditions Reported by Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>Chinese</td>
</tr>
<tr>
<td>Hawaiian</td>
</tr>
<tr>
<td>Japanese</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Reported rates for certain conditions were higher for some ethnic groups. Seventeen percent of the subjects who reported high blood pressure and fourteen percent of those with back problems were of Hawaiian ancestry. Forty-three percent of those with back problems were Caucasian, and twenty-four percent were Chinese. These rates are higher than would be expected considering the distribution of ethnicity in the population.
*Somatic complaints* are related to conditions other than diseases or infections (Hurrell and McLaney, 1988) including items such as excessive perspiration, headaches, muscle tension, quickened pulse or breathing, dizziness, upset stomach, and sleeplessness. Three percent (n=5) of the sample reported complaints very often, and 50% reported occasional experiences.

*Negative Health behaviors* reported by the sample included cigarette smoking and drinking alcoholic beverages. Eighty-five percent of the sample (n=141) reported never or rarely smoking cigarettes, and eight percent (n=13) reported smoking sometimes or often. Seventy-nine percent of the sample reported that they never or rarely drank alcoholic beverages, and six percent (n=10) reported drinking sometimes.

The sample reported experiencing a variety of stress *buffers* including job satisfaction, social support, and positive lifestyle behaviors. Seventy-nine percent of the sample (n=130) reported that they were satisfied with their job, would recommend it to someone else, and would choose it again if given the opportunity. Eighty-four percent (n=139) indicated that they experienced support from their supervisor, co-workers and family. Subjects reported practicing several positive lifestyle habits including consuming nutritional meals daily, practicing stress management techniques at least once a week, regularly pursuing a hobby of special interest, and maintaining some type of religious or spiritual belief system. The
positive lifestyle habits practiced by the sample were compiled and are presented in Table 8.

### Table 8

<table>
<thead>
<tr>
<th>Positive Factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No/Rarely</td>
</tr>
<tr>
<td>Nutritional Meals Daily</td>
<td>4</td>
</tr>
<tr>
<td>Stress Management Weekly</td>
<td>78</td>
</tr>
<tr>
<td>Influenced by Religious Belief</td>
<td>37</td>
</tr>
<tr>
<td>Pursue A Hobby Weekly</td>
<td>12</td>
</tr>
</tbody>
</table>

### Discussion of the Associated Variable Findings

The data on associated variables can best be understood when placed in the context of the model established for this research study (refer to Chapter I, page 24). Stressors in the work and non-work environment are conditions that lead to acute reactions or strains in the worker. The sample clearly experienced a variety of stressors in the work and non-work environment, which supports the implementation of stress management interventions for this sample.

A worker's reaction to stressors is referred to as a stress response outcome. Stress response outcomes can be relatively temporary as in the case of most somatic complaints or more lengthy in duration such as the health conditions reported by the sample. The prevalence of certain conditions indicates that this sample manifests stress response outcomes, and suggests the value for exploration in future research.
Analysis of the data on stress response outcomes indicated some differences with respect to ethnic background. A few ethnic groups experienced some health conditions to a greater extent than would be expected from their distribution in the sample population. These data are strongly suggestive of cultural risk factors, and may be of interest for future research.

The negative effects of the stress response outcome can be buffered, or reduced, by certain factors. Associated variable findings indicated that the sample reported high job satisfaction, social support and positive lifestyle behaviors. The presence of these buffers will impact participation in the stress management intervention and effectiveness of the interventions since many of the goals of the program are already being practiced by the sample.

Three aspects of the data on associated variables directly relates to the testing of hypotheses for this study. 1) The sample is experiencing stress as characterized by demands from non-work and worksite stressors. Therefore, a need for stress management interventions is suggested. 2) The sample is experiencing negative stress response outcomes. Individuals who report stress response outcomes have first-hand experience of the stress response process, although they may not associate the conditions with stress. and, 3) The majority of the sample is already practicing positive lifestyle behaviors which tend to buffer the negative impact of the stressors in their life. The practice of positive lifestyle behaviors indicates that the subjects are in the stage described as "readiness for behavioral change". However, because they are
already practicing something, and have very busy lifestyles, they may not want to participate in a formal program. These issues will be explored in the following section.

Testing Hypothesis #1

The first hypothesis states that there will be significant differences in preferred training format related to employee characteristics including temperament type, readiness for behavioral change, and attribution pattern. In order to test this hypothesis, the findings for preferred format and each of the individual characteristics was analyzed. The first variable to be presented is preferred format.

Survey respondents indicated which type of format they preferred prior to being assigned to an intervention group. Findings are presented in the graph below.

**Graph 1**

Format Preference

![Graph showing format preference with legend for Independent, Group, and Combination types.]
Thirty-eight percent preferred a workbook and tape that they could complete independently (n=63); twenty-two percent (n=36) chose the group sessions, and twenty-seven percent (n=45) preferred a combination setting including group sessions with a workbook and tape.

The extent to which each survey respondent was ready for behavioral change in the area of stress management was measured by subject responses to survey items (Appendix A page 161, items 23 and 24) concerning 1) perceived value of training and 2) willingness to attend the stress management intervention program. Subjects reported how valuable they felt most stress management interventions (SMI) were. Seventeen percent (n=28) reported "not very valuable", sixty-five percent (n=108) responded "somewhat valuable", and eighteen percent (n=29) indicated "very valuable". Subject responses to "value of training" are presented in the graph below.

Graph 2

Value of Training

Legend
- Not Very Valuable
- Somewhat Valuable
- Very Valuable

Number of Subjects

Relative Intensity
All of the 28 subjects who indicated that they felt that most stress management programs are not very valuable also indicated that they definitely did not want to attend the program. These subjects also denied the opportunity to participate when an offer to attend was extended. Subjects indicated willingness to attend the stress management intervention by responding to the item which asked "if your employer offered a stress management course designed particularly for you would you attend?" with one of the following: a) no; b) not sure; c) maybe; or, d) definitely. Eighteen percent of the respondents (n=29) marked "no"; twenty-one percent (n=35) were "not sure"; forty-two percent (n=70) said "maybe"; and, eighteen percent (n=29) said "definitely". Survey respondents who marked "not very valuable" also did not indicate a preferred training format. The tabulation of subject responses to the item involving "willingness to attend" are presented in presented in the graph below.

Graph 3
In order to assess the relationship between temperament type and format preference, it is necessary to compare the sample (S) distribution with a national sample of the general (GP) population and a national sample of engineers (E).

Table 9
Temperament Type: General Population(GP), Engineers(E) and Sample(S)

<table>
<thead>
<tr>
<th></th>
<th>SENSING TYPES</th>
<th>INTUITIVE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>with Thinking</td>
<td>with Feeling</td>
</tr>
<tr>
<td>N</td>
<td>ISTJ</td>
<td>ISFJ</td>
</tr>
<tr>
<td>T</td>
<td>GP 5%</td>
<td>GP 5%</td>
</tr>
<tr>
<td>R</td>
<td>E 15%</td>
<td>E 6%</td>
</tr>
<tr>
<td>O</td>
<td>S 30%</td>
<td>S 9%</td>
</tr>
<tr>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>ISTP</td>
<td>ISFP</td>
</tr>
<tr>
<td>R</td>
<td>GP 5%</td>
<td>GP 5%</td>
</tr>
<tr>
<td>T</td>
<td>E 5%</td>
<td>E 3%</td>
</tr>
<tr>
<td>S</td>
<td>S 0</td>
<td>S .6%</td>
</tr>
<tr>
<td>X</td>
<td>ESTP</td>
<td>ESFP</td>
</tr>
<tr>
<td>T</td>
<td>GP14%</td>
<td>GP14%</td>
</tr>
<tr>
<td>R</td>
<td>S 4%</td>
<td>E 3%</td>
</tr>
<tr>
<td>A</td>
<td>ESTJ</td>
<td>ESFJ</td>
</tr>
<tr>
<td>R</td>
<td>GP14%</td>
<td>GP14%</td>
</tr>
<tr>
<td>T</td>
<td>E 12%</td>
<td>E 5%</td>
</tr>
<tr>
<td>S</td>
<td>S 26%</td>
<td>S 11%</td>
</tr>
</tbody>
</table>

Summary of Selected Traits

<table>
<thead>
<tr>
<th></th>
<th>GP</th>
<th>E=75%</th>
<th>I=25%</th>
<th>S=75%</th>
<th>N=25%</th>
<th>T=50%</th>
<th>F=50%</th>
<th>J=50%</th>
<th>P=50%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>E=48%</td>
<td>I=52%</td>
<td>S=53%</td>
<td>N=47%</td>
<td>T=67%</td>
<td>F=33%</td>
<td>J=60%</td>
<td>P=40%</td>
</tr>
<tr>
<td>S</td>
<td>E=52%</td>
<td>I=48%</td>
<td>S=79%</td>
<td>N=21%</td>
<td>T=68%</td>
<td>F=32%</td>
<td>J=93%</td>
<td>P= 7%</td>
<td></td>
</tr>
</tbody>
</table>
According to the MBTI data bank, there are three Extroverts (75%) for every Introvert (25%) in the general population. However, in the sample of engineers, there were almost equal percentages of Extroverts (48%) and Introverts (52%). Data on the general population (N=17,000) and the sample of engineers (N=986) reveal tendencies that are useful for understanding and explaining the research findings. A paired t test was conducted to determine if the number of subjects in each of the four basic temperament types (SP=3; NT=19; NF=20; and, SJ=102) could have occurred by chance alone. Paired t test results (which were significant at the .05 level of confidence) are as follows: SJ with SP= 2.24; SJ with NT= 2.08; SJ with NF= 2.16; SP with NT= 1.98; and SP with NF= 2.04. These results indicated that it can be concluded with 95% confidence that the distribution of subject temperament types is significantly different (except for NTs and NFs) and not due to sampling bias.

Some interesting tendencies are revealed from analysis of the data presented in Table 9. Although the sample was not from a national sample, there are similarities between the MBTI engineering sample data and the research sample involved in this study. Workers in the engineering field tend to prefer making judgements by thinking about information gathered with the senses. The related temperament types are ISTJ, which comprised 15% of the Engineers in the MBTI databank, and ESTJ which comprised 12% of the sample of Engineers in the MBTI data bank (refer to Chapter II, pp 54-61 for an explanation of this analysis). The MBTI sample of Engineers and the HECO sample were more similar to each other than to the MBTI general
population. For example, the HECO sample was similar to the Engineers with respect to the almost equal distribution of introverts (48%) and extroverts (52%). Furthermore, the research findings indicated that the majority of the HECO sample (56%), similar to the national sample of engineers, tended to prefer making judgements by thinking about information gathered with the senses (ISTJ=30% and ESTJ=26%). Analysis of the HECO sample data revealed a predominance of ESFJ (11%), and ISFJ (9%) types which was not found in the MBTI National databank general population and sample of engineers. Correlations were conducted using the four main temperament types found in the sample (ISTJ; ESTJ; ISFJ; and, ESFJ).

The Attribution Pattern Assessment Inventory was used to assess subject attribution of responsibility. Average scores were derived for: the problem, the solution, and the main character. Results for the problem are presented below.

Graph 4
Although subjects could respond to each of the six items, attribution of responsibility for the problem was largest for the main character, followed by supervisor and the firm.

Subject responses related to attribution of responsibility for the solution to workplace problems were also tabulated. The results are presented in the graph below.

**Graph 5**

![Attribution Pattern for the Solution](image)

Similar to attribution of responsibility for the problem, more subjects in the sample attributed responsibility for the solution to the main character, although the supervisor and co-workers were also identified.
Attribution for the main character was measured by subject response to a single item which asked if the main character was responsible for either the solution, the problem, both or neither the solution or the problem. The Compensatory model, which formed the basis for the research intervention, assumes that employers and employees attribute responsibility only for solutions to workplace problems to employees, not responsibility for the problems. Analysis of subject responses on the Attribution Pattern Assessment Inventory supported this assumption. Eighty percent of the sample identified only the solution (n=114). Ten percent identified the problem and the solution. Ten percent (n=15) identified the problem only, and none of the subjects in the sample indicated that they felt the main character was responsible for neither the problem or the solution.

Principal axis and component analysis of the Worksite Attributional Pattern Survey (using varimax and oblique rotation) indicated that there were two main factors (eigenvalues greater than 1) for the problem and the solution. The first factor for the problem (Supervisor, co-worker, uncontrollable forces and the firm) explained 43% of the variance. A reasonable label for this factor is external sources for the problem. The second factor (main character) accounted for 20% of the variance. The second factor was labeled internal sources for the problem. The remaining variance was attributable to other factors which were not of sufficient size (eigenvalues less than 1) to be included in the analysis.
The first factor for the solution (Main Character, Co-worker, and Supervisor) accounted for 41% of the variance, and was labeled solutions close to the worker. The remaining variance was accounted for by the other sources of attribution (with eigenvalues less than 1) and, therefore, were not included in this analysis. Findings on attribution for solutions to workplace problems indicate that subjects perceived a variety of sources for responsibility.

Sample scores on the Attribution Pattern Assessment Inventory which were tabulated for attribution of responsibility 1) for the problem, 2) for the solution, and 3) for the main character were included in the correlation analysis to determine associations with format preference. Results of the correlation analysis testing the impact of all three individual characteristic variables included in the first hypothesis are discussed in the next section.

A correlation analysis was performed on sample data to test the first hypothesis which stated that there would be a significant difference in preferred format related to temperament type, readiness for behavioral change, and attribution pattern. A positive correlation was expected between value and attending. Analysis of the data confirmed that expectation since there was a positive correlation between value and attending which was significant at the .01 level of confidence ($r = .423$). This finding was reduced to a non-significant association when the predominant Sensing-Judgmental (SJ) temperament type was controlled for. In other words, there was not a significant association between format and attending for the SJ types.
Another assumption related to temperament type and format preference was that the Feeling (F) types would prefer group interventions (either group or combination). This prediction was confirmed since subjects who prefer to make decisions based on feelings about values (F) demonstrated a positive correlation between format and value that was significant at the .01 level (r=.411). Those who prefer making decisions by thinking (T) demonstrated a positive correlation between format and attending that was significant at the .01 level (r=.310).

Analysis of the Attribution Pattern Assessment Inventory revealed that the majority of the sample (80 percent) indicated that they felt employees were responsible for solutions rather than for stress related problems in the workplace. The other assumption concerning attribution was that subjects who attributed responsibility for solutions to stress-related problems to the main character would also value stress management. This assumption was supported by the data since there was a positive correlation (at the .05 level of significance) between attribution to the main character for the solution and value of the program (r=.148).

Discussion of Hypothesis #1

As indicated by the findings, a positive association existed between value and willingness to attend. Format preference was associated (significant at the .01 level) which indicates that those subjects who felt the stress management program had value were more likely to express willingness to attend the program. Subjects who reported
that they did not value most stress management programs also indicated that they did not want to attend the program. One of the findings concerning temperament type indicated that the Feeling (F) types preferred group formats. Another finding was that the Sensing-Judging (SJ) types indicated that they would attend the training even if they felt that other stress management programs were not very successful. This finding is consistent with the qualities of this type since they prefer to collect information with the senses and then make judgements. One possible explanation for this finding is that they chose to reserve the final decision until after participating in the program. The findings for Hypothesis #1 demonstrated a significant relationship between format preference and individual characteristics.

Testing Hypothesis #2

The second hypothesis stated that there would be a significant difference in participation in the Attribution Stress Management Program related to employee characteristics including temperament type, perceived need for and value of training, preferred format and attribution pattern. There were several levels of participation included in this research project. At the first level, the original survey battery was distributed to 295 HECO merit employees at the Ward Street facility. Fifty-six percent (n=165) returned the survey, constituting the first level of participation. The next level involved the subject's original intent to participate reported on the OSI. When asked if they would participate in an employer sponsored stress management training program, 18% of the subjects said no (n=29), 21% said not sure (n=35),
42% said maybe (n=70), 18% said definitely (n=29), and .03% did not respond (n=5). A positive correlation was identified between original intent to attend the stress management program and preference for group course format ($r= .291$) which was significant at the .05 level. The correlation ($r= .414$) between value and attendance was also positively correlated and significant at the .01 level of significance.

Subjects who indicated an interest in attending the workshop were assigned to either the Control Group, the independent group (book and tape), the group sessions, or the combination sessions (group + workbook and tape). Equal numbers of subjects were assigned to each group based on: 1) exact match with preferred format; 2) partial match with preferred format; 3) no match with preferred format; and, 4) no intervention. Once subjects were assigned and agreed to participate, they were given a pre-test to measure knowledge and practice of stress management skills.

The pre-test included six questions relating to the stress process:

1. I understand the stress process including sources of stress and stress response outcomes: ( )Never ( )Rarely ( )Sometimes ( )Usually ( )Always

2. I experience an enjoyable, deep state of relaxation (other than sleep) on a daily basis: ( )Never ( )Rarely ( )Sometimes ( )Usually ( )Always

3. I practice systematic relaxation skills on a daily basis: ( )Never ( )Rarely ( )Sometimes ( )Usually ( )Always

4. I am aware of unresolved physical, mental and psychosocial stressors as they occur in my life: ( )Never ( )Rarely ( )Sometimes ( )Usually ( )Always
5. I am aware of my reaction to unresolved stressors as they occur:
(Never) (Rarely) (Sometimes) (Usually) (Always)

6. I use relaxation skills when confronted with unresolved stressors:
(Never) (Rarely) (Sometimes) (Usually) (Always)

The Post-test began by asking subjects to read each item carefully, then respond according to any changes which have occurred in the last two months. In addition to the six items listed above, the following six items were included:

7. Factors in the physical environment at work (i.e., lighting, noise, temperature, air quality, etc.):
( ) Got a lot worse
( ) Worsened slightly
( ) Remained the same
( ) Improved slightly
( ) Improved significantly

8. Factors in the social environment at work (i.e., relations with supervisor, co-workers, and the public):
( ) Got a lot worse
( ) Worsened slightly
( ) Remained the same
( ) Improved slightly
( ) Improved significantly

9. Demands made upon me at work:
( ) Got a lot worse
( ) Worsened slightly
( ) Remained the same
( ) Improved slightly
( ) Improved significantly

10. The amount of control I have to perform my duties:
( ) Decreased a lot
( ) Decreased slightly

11. My physical health has:
( ) Got a lot worse
( ) Worsened slightly
( ) Remained the same
( ) Improved slightly
( ) Improved significantly

12. My overall Stress level at work:
( ) Improved a lot
( ) Improved slightly
( ) Remained the same
( ) Increased slightly
( ) Increased significantly

13. Check the item below that best describes how you feel now:
( ) I’m not interested in any kind of stress management program
( ) I would like a workbook and tape
( ) I would like to be in a Group Stress Management Program
Analysis of the sample responses (n=65) to the pre-test indicated that many of the subjects did not understand the stress process, did not experience relaxation other than sleep and did not practice relaxation techniques. Ninety percent (n=58) of the sample did not understand the stress process although they reported experiencing unresolved demands and were aware of reactions to stressors. Eighty percent (n=52) reported that they did not experience a deep state of relaxation other than sleep daily. Forty percent (n=26) reported practicing relaxation skills. Ninety-two percent (n=60) reported that were sometimes aware of stressors and response outcomes, while ten percent (n=6) actually used relaxation skills when confronted with unresolved stressors.

Analysis of the post-test data indicated that ninety-three percent (n=27) of the subjects who were assigned to an intervention that either matched or was a partial match with their original format preference (n=30) demonstrated an increase in knowledge of the stress process and practice of relaxation skills. Additional comments included "I participated because I'm interested in stress management. The sessions were fun and I learned a lot. I liked the tape and the opportunity to share with others. It's nice to know I'm not alone." Sixty-four percent (n=12) of the subjects who were assigned to the control group and received no intervention reported no change in awareness or practice. Thirty-six percent (n=8) reported that they did not learn anything, and practiced less than at the time of the pre-test. Nine percent (n=2) of the control group indicated that they increased awareness and practice. The
participants who were assigned to a format that did not match their original preference did not respond to the pre-test or post-test. Efforts to contact this group were unsuccessful, so there is no data to explain this phenomena. Participation results according to the extent of matched assignment (exact, partial or no match) are presented in Table 10.

Table 10

Levels of Sample Participation in the Stress Management Intervention (n=67)

<table>
<thead>
<tr>
<th>Group Assignment</th>
<th>Level of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assigned</td>
</tr>
<tr>
<td>Exact Match</td>
<td>15</td>
</tr>
<tr>
<td>Partial Match</td>
<td>15</td>
</tr>
<tr>
<td>No Match</td>
<td>15</td>
</tr>
<tr>
<td>No Intervention</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
</tr>
</tbody>
</table>

As indicated in Table 10, participation in the stress management program was affected by format preference, particularly for subjects who were assigned to a format that matched (exactly or partially) their stated preference.

Of the forty-one subjects who completed the post-test, seventy-three percent (n=11) were matched exactly, eighty percent (n=12) were matched partially, and six percent (n=1) were not matched with the format of preference. Analysis of post-test results indicated that the participants enjoyed the program, gained greater
understanding of the stress management process, and increased practice of stress management behaviors compared to the control group.

**Discussion of Hypothesis #2**

All subjects who were in the group and combination intervention, participated both verbally and physically in all activities. All of the 25 participants in the stress management program (except one) indicated that the program was interesting and useful. Participation in each group session was facilitated by the researcher in such a way as to guarantee active participation. Activities required each participant to share experiences or to participate physically. Because of the Compensatory nature of this model (no rewards or coercion) not all the subjects who completed the pre-test finished the program. This phenomena can be explained by two criteria: 1) readiness for behavioral change, and 2) matching preferred format with intervention strategy. Subjects who finished the program all indicated prior to participation that the program probably had value, and 93% (n=25) indicated that they would definitely attend if given the opportunity. The majority of subjects who completed the program were assigned to the format type that they most preferred. This finding seems to support the assumption that individuals who are ready for behavioral change (as demonstrated by perceived value and willingness to attend) are the most likely to participate in related training.
Testing Hypothesis #3

The third hypothesis stated that participation in an employer sponsored stress management program would change attribution in the direction stipulated by the program goals. This hypothesis was tested by comparing pre-test and post-test scores for participants in the stress management program to determine if there was any change in response and, if so, the direction of change.

Graph 6

As illustrated in the graph above, post-test scores on the Attribution Pattern Assessment Inventory were compared with pre-test scores for the control group (n=17) and those who completed an intervention (n=24). Although there were only 24 participants who completed the training program, subject attribution of responsibility to self increased following participation. The participant who was
mismatched and completed the intervention showed no change. Participants in the Control group (n=17) who received no training (control group) showed either a negative change (n=7) involving increasing attribution of responsibility to external sources, or no change at all (n=10). Subjects who were assigned to a format that matched exactly or partially with their original format preference demonstrated either: no change (n=9); or a positive change (n=14) with an increase in attribution of responsibility to self.

Discussion of Hypothesis #3

Participants who were assigned to an intervention format that matched (exactly or partially) with their original preference, participated in the stress management intervention and demonstrated an increase in attribution of responsibility to self for stress-related problems in the workplace and solutions to those problems. The findings support the assumption that participation in an attributional stress management program will increase subject attribution of responsibility to self, replication on a larger sample would allow more confidence in the findings.

As suggested by the findings, attribution training is a valuable tool for researchers in the field of stress management, particularly in combination with interventions which focus on removing or restructuring physical and social factors in the organizational climate. By increasing the amount of internal responsibility employees attribute for solutions to stress-producing problems at the worksite, individuals naturally become more motivated to work effectively and productively.
Testing Hypothesis #4

The fourth hypothesis was exploratory in nature and was dedicated to discovering predictors of format preference and attendance. The first step in this examination was to determine cultural factors related to temperament type preference. The characteristics depicted below will be referred to throughout this section. Data on temperament types found in the sample was analyzed by ethnic group. The distribution of three types (ESFJ, ISTJ and ESTJ) were of sufficient size to allow further analysis (remaining types were combined in the "other" category). To facilitate interpretation of the temperament type data, characteristics of the four basic temperament types are described in Figure 8.

**Figure 8**

Contributions made by each of the Four main Types

<table>
<thead>
<tr>
<th></th>
<th>(S) Sensing Types</th>
<th>(T) With Thinking</th>
<th>(F) With Feeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>J Judging (Introverts)</td>
<td>ISTJ</td>
<td>T Logic and analysis</td>
<td>ISFJ</td>
</tr>
<tr>
<td></td>
<td>I Depth of concentration</td>
<td>S Reliance on facts</td>
<td>I Depth of concentration</td>
</tr>
<tr>
<td></td>
<td>J Organization</td>
<td></td>
<td>S Reliance on facts</td>
</tr>
<tr>
<td>J Judging (Extroverts)</td>
<td>ESTJ</td>
<td>T Logic and analysis</td>
<td>ESFJ</td>
</tr>
<tr>
<td></td>
<td>E Breadth of interests</td>
<td>S Reliance on facts</td>
<td>E Breadth of interests</td>
</tr>
<tr>
<td></td>
<td>J Organization</td>
<td></td>
<td>S Reliance on facts</td>
</tr>
</tbody>
</table>

The distribution of temperament type by ethnicity was also analyzed and the findings appear on the following page in Table 11.

124
The data presented in Table 11 provides information valuable for understanding the association between cultural factors, temperament type and occupation. Based on an analysis of the data in Table 11 using the Goodness of Fit test it can be concluded with 95% confidence that the proportion of individuals in each temperament type by ethnic group is different. The procedure for investigating the degree of self-selection is indicated by the Self-Selection Ratio (SSR) which is calculated by dividing the percentage of frequency of that type in the sample divided by the percentage frequency of that type in the base population (Myers and Myers, 1980). Values above 1.00 indicate a positive selection, values below 1.0 indicate some degree of avoidance. Four ethnic groups were of sufficient size for analysis (Caucasian, Chinese, Hawaiian and Japanese) and the remaining groups were combined in the "other category". Table 12 presents SSR calculations for Sensing-Judging (SJ) types by ethnicity (see Figure 7, page 62 for a description of characteristics).
Table 12

SSR Scores for SJ's by Ethnicity (n=144)

<table>
<thead>
<tr>
<th></th>
<th>Extroverts (E)</th>
<th></th>
<th>Introverts (I)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feeling</td>
<td>Thinking</td>
<td>Feeling</td>
<td>Thinking</td>
</tr>
<tr>
<td>Caucasians</td>
<td>n=2</td>
<td>n=10</td>
<td>n=14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13%</td>
<td>34%</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SSR=1.2</strong></td>
<td><strong>SSR=1.3</strong></td>
<td><strong>SSR=1.1</strong></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>n=1</td>
<td>n=4</td>
<td>n=9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>14%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SSR=.54</strong></td>
<td><strong>SSR=.54</strong></td>
<td><strong>SSR=.73</strong></td>
<td></td>
</tr>
<tr>
<td>Hawaiian</td>
<td>n=2</td>
<td>n=2</td>
<td>n=1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13%</td>
<td>7%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SSR=1.2</strong></td>
<td><strong>SSR=.26</strong></td>
<td><strong>SSR=.1</strong></td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>n=9</td>
<td>n=11</td>
<td>n=12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56%</td>
<td>38%</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SSR=5.1</strong></td>
<td><strong>SSR=1.5</strong></td>
<td><strong>SSR=.97</strong></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>n=2</td>
<td>n=2</td>
<td>n=5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13%</td>
<td>7%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SSR=1.2</strong></td>
<td><strong>SSR=.26</strong></td>
<td><strong>SSR=.40</strong></td>
<td></td>
</tr>
</tbody>
</table>

As indicated in Table 12, the Japanese subjects indicated a very positive selection for the Feeling (F) type. It is noted here that the feeling types make decisions based on feelings about inner values.

The next part of this Hypothesis was to identify predictive factors related to participation in the Stress Management Intervention (SMI). To determine if there were any factors related to temperament type that could act as predictors for participation, SSR data was calculated for those who completed the SMI (n=25). The SSR calculations for each Temperament Type is presented in Table 13.
Table 13
SSR Calculations for Intervention Participants (n=25)

<table>
<thead>
<tr>
<th>SENSING TYPES</th>
<th>INTUITIVE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Thinking</td>
<td>with Feeling</td>
</tr>
<tr>
<td>with Feeling</td>
<td>with Feeling</td>
</tr>
<tr>
<td>ISTJ</td>
<td>ISFJ</td>
</tr>
<tr>
<td>2.8%</td>
<td>8%</td>
</tr>
<tr>
<td>Judge-</td>
<td>SSR=.93</td>
</tr>
<tr>
<td>V</td>
<td>ISTP</td>
</tr>
<tr>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Percep-</td>
<td>SSR=6.67</td>
</tr>
<tr>
<td>E</td>
<td>ESTP</td>
</tr>
<tr>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Percep-</td>
<td>SSR=6.67</td>
</tr>
<tr>
<td>T</td>
<td>ESTJ</td>
</tr>
<tr>
<td>20%</td>
<td>12%</td>
</tr>
<tr>
<td>Judge-</td>
<td>SSR=.77</td>
</tr>
</tbody>
</table>

Discussion of Hypothesis #4

The data presented in this section indicates that there are factors which effect format preference related to temperament type and culture. As illustrated in Table 12, the Self-Selected Ratio (SSR) indicates that the Caucasians demonstrated a positive preference in each of the three temperament types. Similarly, Hawaiians were strong ESFJs. The Japanese respondents demonstrated a very strong preference for the ESFJ type. The ESFJ is an individual whose focus of attention is outward (E) and who acquires knowledge through the senses (S) and makes judgements (J) based on inner
feelings about what is perceived. The Feeling (F) types prefer group interaction and value positive interpersonal relations. The ESFJ type prefers to be a provider and guardian. Analysis of the Occupational Stress Inventory (OSI) data revealed that the ESFJ's had a mean of 3.06 on the items involving responsibility for others at work, indicating that they had "a lot" of responsibility for others. People in supervisory positions often have the skills of a "provider" or a "guardian". The tasks are not totally restricted to engineering for the ESFJs since they also are involved in management duties and require related skills.

Analysis of the "Other" data revealed that the largest ethnic group represented in the ESFJ type was the Pacific Islanders. These data can be explained to some extent by cultural factors. For example, the Caucasian cultural pattern tends to value assertiveness and self-reliance which explains the very positive preference for the three types and the ISTJ and the ESTJ preferences. As was explained earlier, the ESFJ preference is related to performance of managerial and supervisory duties in a typical "Kamaaina" firm. The term "Kamaaina" is a Hawaiian word that refers to a "local" Hawaiian style of caring for each other. However, the very strong preference identified for the Japanese ESFJ is somewhat different. The Japanese culture in Hawaii is characterized by a very strong social responsibility and social ties (family and friends), with emphasis on personal values, education, practicality and material success while maintaining the respect of others which is often referred to as "saving face" (Ogawa, 1978; Whithey, 1986), and an example of Confucian Dynamism.
Extroverts who gather information with the Senses and make Judgements based on Feelings about inner values (ESFJ) tend to be practical, interested in material possessions, concerned with the details of practical experience, and strive for an opportunity to be of service to others in their jobs (Myers and Myers, 1980). The preference for ESFJ appears to be closely associated with Japanese cultural values, although replication with a larger sample and detailed investigation of this association would strengthen the findings.

Analysis of the data suggests that SMI participants were characterized by the temperament types assumed (in Chapter II) to be most predominant, namely introverts (ISTJ) and extroverts (ESTJ) who prefer making judgements based on thoughts about information collected through the senses (ISTJ). Although SSR figures indicated positive preferences for other types, the n size (less than 5) was not large enough for conclusive findings. Therefore, it can be assumed that SJTs were most likely to participate. However, this data does not explain why other individuals with the same preference did not choose to participate.

Summary

This chapter has presented findings from the Occupational Stress research project conducted with HECO merit employees at the Ward Street facility. The data from the initial Occupational Stress Inventory yielded the largest amount of information. Many participants commented about difficulties experienced in completing such a long and complicated survey. Consequently, it is not surprising
that only 54 percent of the employees (n=165) returned the survey. According to interviews with participants, the lack of participation resulted from several factors. First, the survey was so lengthy and time consuming that many did not want to complete it. In addition to being very busy at work, subjects had many responsibilities at home. Analysis of the survey data indicates that this population experiences a very large work demand and has many non-work obligations which require time and energy to fulfill. The work and non-work activities have a higher priority than participation in a time-consuming project that has unconfirmed results.

Secondly, this research was based on the compensatory model which assumes that subjects are responsible for managing their own stress and, therefore, delivered no rewards or incentives. The compensatory model assumes that employees are responsible for solutions to stress-producing problems in the workplace, not for the problem itself. Because of the sample data on attribution of responsibility to the main character, there was strong match between company attribution and employee attribution. Both the organization and the employees attributed responsibility for solutions to problems to workers. Subjects were reminded to complete the survey and to attend sessions, but they were neither compelled nor rewarded for complying.

The sample indicated value for several behaviors that had an effect on the impact of stress producing demands in the workplace. The sample practiced lifestyle habits which promote health. Many of the people already felt that they were aware of stress and were doing something about it. Other behavioral attitudes included values
supporting the group and the organizational values. The majority of the sample (71%) expressed personality characteristics which promote adherence to the current organizational structure while limiting dissention. It is generally very difficult for individual employees to control the physical environment, the societal/contextual climate of the work environment, and the workload demand. Promoting change outside of themselves is even more difficult for people who prefer solitude and value the status quo because they are not likely to speak out or work to change an environment where there is a heavy workload, social pressure to produce more, and limited support for change. Although this project did inquire about sources of stress in the work environment, priority was given to individual change and interventions designed to reduce those factors were not emphasized.

Findings supported acceptance of all four hypotheses. For the first hypothesis, readiness for behavioral change was strongly associated with preferred course format. The significant positive relationship between perceived value and willingness to attend the program was not evident for the SJ temperament type, indicating that this group reserved judgement on future programs, even though they may have considered such programs to have questionable value in the past. Concerning the second hypothesis, participation in the stress management program was positively related to readiness for behavioral change and assigning participants to a program that either exactly or partially matched the subject’s preferred course format. Findings also supported the third hypothesis which stated that attribution
training would increase internal attribution of responsibility for the participants, although attrition of participants led to a sample size which was large enough for strongly suggestive conclusions but not large enough for a "final word" on the third hypothesis. Analysis of the findings for hypothesis number four revealed predictors of format preference and program attendance including readiness for behavioral change, matching format preference with intervention strategy, characteristics of temperament, and cultural values. Significant differences were found in the distribution of Temperament Type. The distribution for each of the four types was not equal, and all comparisons were significantly different except intuitive-thinking and feeling (NT and NF) types. Attribution for the problem and attribution for the solution correlated significantly across the eight scenarios. Value of training was significantly correlated with attendance and with a preference for the group course format. Finally, participation in the attribution based stress management program did facilitate a positive change in attribution to self (although the numbers were too small for statistical significance).
CHAPTER V: SUMMARY, CONCLUSIONS and RECOMMENDATIONS

This chapter provides an overview of the study, a summary of the major findings, and conclusions. Recommendations for future research and future practice are also included.

Overview of This Study

The purpose of the research study was to design, implement and evaluate an employer-sponsored stress management intervention which was sensitive to individual characteristics manifest in the target population. The research population of employees in engineering related fields was selected because self reports and administrative consultation revealed that they were experiencing a high workload demand. The sample population was comprised of white-collar employees in engineering related positions working on the Island of Oahu, at the Hawaiian Electric Company Ward Street Facility.

Examination of current research identified factors related to the stress process including demands in the non-work and work environment, and stress response outcomes including health conditions and somatic complaints. Employee characteristics associated with the stress process were identified including readiness for behavioral change, preferred format, temperament type and attributional pattern.

A stress management intervention was designed to match employee characteristics related to temperament type, type A traits, information content, emotion-focused activities, occupation, cultural background, and format preference.
The Compensatory model was used as a basis for designing the stress management interventions since it had proven effective in other occupational stress management programs and because it implied no rewards and no coercion for participation. The compensatory model also involves no blame for problems, and assumes that the provision of resources is all that is necessary to encourage participation in training programs.

This project offered subjects an opportunity to complete a survey battery related to occupational stress management and an opportunity to participate in a stress management intervention. The survey battery was comprised of the National Institute of Occupational Safety and Health General Stress Inventory (NIOSH GSI), the Keirsey-Bates Type Sorter, and the Attribution Pattern Assessment Inventory which was designed for this study. The survey battery was administered to the entire population of merit (white collar) employees (N=295). Three types of interventions were offered, and there was a control group that received no intervention. The three types of intervention formats included were independent, group, and combination (independent and group). In the independent format, subjects (n=15) were given a stress management workbook (high information with a problem-based orientation) and an audio tape (emotion-based) that included step-by-step instructions for stress management (progressive relaxation exercises, autogenic training, visual imagery, cognitive restructuring, and, meditation). In the group format (n=15) subjects met for two hours every two weeks for two months. Presentations included lecture (high
information content with a problem-based orientation combined with group discussion, activities and emotion-based video and audio stress management presentations). In the combination format, subjects were exposed to all conditions present in the group format, plus they were given a workbook and tape for independent study. Equal numbers of subjects were assigned to one of the four possible groups according to a) exact match with preferred format, b) partial match with preferred format, c) no match with preferred format, and d) no intervention (control group). At the end of the two month intervention period, all subjects were given the opportunity to participate in an intervention format of their choice.

Several assumptions regarding potential outcomes of the study were made. The first was that survey respondents who subsequently decided to participate in the stress management intervention would be ready for change (as measured by perceived value of program and intention to participate). The second was that the distribution of temperament types in the sample would be similar to the national sample of engineers reported from the Myers-Briggs Type Indicator databank. Similar to mainland populations of engineers, a high prevalence (38%) of subjects who prefer making judgements by thinking about information gathered from their senses (ESTJ, ISTJ) was expected. Consequently, the program was marketed for this population in the following ways. Initial marketing efforts determined the sample needs to include high information with a problem-based orientation, step-by-step presentations, emotion-based relaxation exercises, and an opportunity for independent study.
Another marketing technique was to conduct a two-way communication process, prior to enrollment, that gathered information regarding need and availability, communicated course goals and content, and notified potential participants about the course content and format to assure them of its appropriateness and relevancy.

Another assumption was that participation in the stress management program would be greater for subjects who were assigned to a format that matched their format preference. Participation was measured by attendance at the sessions, completion of the workbook, and completion of the pre-test and post-test. Finally, the last assumption was that participation in the attributional stress management program would increase subject attribution of responsibility to self for solutions to problems in the workplace. Because the stress response is related to individual attribution of responsibility for solutions to occupational problems, the stress management program was designed to facilitate attributional change in the direction of self responsibility. Therefore, participant responses to pre-test and post-test surveys would indicate attributional patterns demonstrating an increase in attribution of responsibility to self.

Description of the Population and the Sample

The multicultural population (N=295) was comprised of Japanese (41%), Caucasians (24%), Chinese (18%), Hawaiians (9%), and 8% of the population included members from other ethnic backgrounds (Black, Filipino, Korean, Pacific Islander, and mixed). The age range was from 21-65. There were 233 men (79%) and 62 women (21%) in the population. Although surveys were distributed to the
entire population, the 165 (56%) who completed the survey became the research sample. The sample of survey respondents (n = 165) was not significantly different from the general population as demonstrated by analysis of population parameters and sample statistics for age, ethnicity and sex. As would be expected of employees in engineering related fields, the educational level of the sample was very high. Twenty-four percent were high school graduates, fifty percent had a Bachelor degree, fourteen percent earned a Masters degree, and one completed a Doctorate degree.

Sources of Stress

The sample experienced stressful demands from a variety of sources. One source of stressful demands was related to expectations about maintaining a high educational level and keeping up with trends in their field. Ten percent of the sample experienced stress due to loss of spouse, divorce of separation. Other major sources of stress (as measured by the NIOSH General Stress Inventory) included 1) non-work stressors such as responsibility for the care of children or elderly and home care duties, 2) heavy mental demands at work, 3) a very large quantitative workload, 4) type A traits, 5) lack of perceived control, and 6) role conflict. Type A traits were measured by the survey instrument and included twenty items developed from the literature including restlessness and being in a hurry (Appendix A, page 158, 1a-t).

Stress Response Outcomes

Some of the major stress response outcomes reported were negative health conditions including high blood pressure (n = 34), back problems (n = 20), kidney or
bladder problems \((n=10)\), arthritis \((n=8)\), gastritis \((n=6)\), heart disease \((n=5)\), insomnia \((n=5)\), and emotional problems \((n=4)\). Fifty-eight percent of the sample reported no adverse health conditions, twenty-three percent reported one condition, and nineteen percent reported 2-6 conditions.

Ethnic differences related to health conditions were also identified. Caucasians and Chinese experienced a high incidence of back problems. Hawaiians experienced back problems and high blood pressure at rates which were higher than would be expected from the distribution of Hawaiians in the sample.

**Buffers**

Several factors reported by the sample appear to have a buffering effect which tends to reduce or limit the impact of stress-producing demands. The sample reported lifestyle behaviors which have been associated with stress management such as eating nutritional meals, practicing stress management techniques, religious beliefs, and hobbies. The sample also reported avoiding negative health habits such as cigarette smoking and alcohol consumption.

**Major Assumptions**

Subjects who were ready for behavioral change (as measured by perceived value of the program and willingness to participate) were more likely to participate in the stress management program than those who were not ready. Ninety-three percent of the survey respondents who completed the stress management training were ready for behavioral change. Subjects who were assigned to a format that matched (exactly
or partially) their preference were more likely to participate and complete training than those who were assigned to interventions that did not match the preferred format.

When considering temperament type as measured by the Keirsey-Bates temperament sorter, the findings supported initial assumptions. Analysis of temperament type data supported initial assumptions. The majority of the sample was comprised of people who prefer to make judgments based on thoughts about information gathered from their senses (ISTJ and ESTJ). The Feeling types (F) preferred group formats, and the predominance of ESFJ types in the Japanese population indicated the presence of traditional characteristics associated with Asian cultural belief patterns. There was a high prevalence (56%) of subjects who preferred making judgments by thinking about information gathered from their senses (ESTJ, ISTJ).

The matching criteria were verified by the findings. Type A patterns were identified for the sample and the organization. Furthermore, responses to the Attribution Pattern Assessment Inventory indicated that the sample and the organization valued the compensatory model which attributes responsibility for solutions to stress-related problems in the workplace to the main character. With respect to matching format preference to intervention strategy, eighty-four percent of the subjects who completed the stress management program were assigned to a format that matched their format preference. Finally, subjects who completed the stress
management program demonstrated an increase in attribution of responsibility to self as measured by pre-test and post-test attributional patterns.

Although the Occupational Stress Inventory was lengthy and difficult to complete, it proved to be a valuable screening measure for identifying employee characteristics related to stress, health and productivity. The attribution inventory developed for this project demonstrated external validity, as measured by the validation of the scenarios by the pilot test group and by the HECO managers who determined mundane realism and relevance to their employment setting. The instrument also proved to be useful for the measurement of attributional change related to occupational sources of stress and solutions to those situations (see page 122). Sufficient data was obtained to suggest the need for further study in this area.

Analysis of data supported all four hypotheses: 1) Individual characteristics had a significant positive impact on preferred course format. Readiness for behavioral change was strongly associated with preferred course format. The significant positive relationship between perceived value and willingness to attend the program was not evident for the SJ temperament type, indicating that this group reserved judgement on future programs, even though they may have considered such programs to have questionable value in the past. 2) Participation in the stress management program was positively related to readiness for behavioral change and matching (defined as assigning participants to a program that either exactly or partially matched the subject's preferred course format). 3) Attribution training
increased internal attribution of responsibility for participants in the stress management program, although replication on a larger sample would strengthen the findings. 4) Predictors of format preference and program attendance were identified including readiness for behavioral change, matching format preference with intervention strategy, characteristics of temperament, and cultural values.

Conducting Research in the "Real" World

This study involved applied research since it was conducted in a real world of work setting. Consequently, several considerations must be made. First, unlike a college classroom where students participate in order to receive a good grade for the class, this sample was characterized by a very heavy mental and quantitative workload. The subjects were also very involved in non-work responsibilities, thus accounting for the high attrition rate. Participation might have been improved by two main factors: organizational support and personal contact. If the organization had provided incentives (time off from work to attend and demonstration of responsiveness for addressing the stressful working conditions) the employees might have been encouraged to believe that the source of the demands might be reduced. Furthermore, if the organization had allowed personal contact with the sample (even though such contact might have taken employees away from their work) more cooperation and communication could have been achieved. This issue brings up certain ethical concerns related to conducting stress management interventions that focus on the individual without addressing the organization. As suggested by Ganster
and his associates (1982) there are ethical reasons why it might be advisable not to initiate a stress management program. If company efforts are not enacted to reduce sources of noxious and stressful organizational, task and role characteristics, it is unethical to merely prepare individual employees to alter their reaction to those sources of stressful demands. Therefore, stress management programs conducted in the "real world of work" must include individual and organizational goals and evaluations if they are to be truly successful.

After this project was completed, HECO brought in a consultant team (from the "mainland") to assess the organizational climate and working conditions. Eight months later, the consultant team finished the investigation and recommended hiring a senior vice president to implement the recommended changes. The recommendation was accepted and the lead consultant was hired for the position. Rapid changes affecting organizational climate, job design and workload were enacted.

Conclusions

It can be concluded from this study that occupational stress is an important topic for researchers in the field of public health. The effectiveness of programs designed to facilitate employee skills related to stress management are effected by employee characteristics such as demographics, readiness for behavioral change, temperament type and attribution pattern. Programs that are marketed to administrators and employees through open discussions have increased chances for achieving stated goals and objectives, particularly when they provide employees with
an opportunity to select a format that matches their individual characteristics such as temperament type and preferences for independent, group, or combination training formats.

**Recommendations for Future Research**

The results of this study could provide information which would be useful for designing, implementing and evaluating health promotion programs in the workplace. The efficacy of workplace health promotion programs could be improved if employee characteristics such as attitudes, preferences, temperament and needs were considered from the onset. Information collected about sources of occupational stress could be analyzed in order to make the organization inherently less stressful. Future projects could benefit from information gained by this study by designing research that incorporates attribution training, matches individual characteristics with intervention strategies, addresses readiness for behavioral change, and includes marketing and followup procedures. The findings indicate that there is value in designing interventions that are sensitive to individual characteristics while incorporating individual and organizational concerns and outcome measures. As indicated by this study, preferences for particular types of training models and personality characteristics have a significant effect on participation in health promotion programs. The next step for research in this area would be to replicate the findings on a larger sample.
Researchers need to understand employee orientations in order to provide necessary, relevant and effective interventions. Low participation and high drop-out rates may be associated with the fact that the majority of programs provide services which focus on symptoms, providing services designed to reduce risk factors without determining employee attitudes and values. Program planners may also have difficulty anticipating future implications if current needs are not perceived accurately. More effective stress management programs may contribute to organizational efforts to control health care costs, utilization of health care services, stress-related worker compensation claims, employee morale and productivity. Several future research questions are suggested by this study. What is the relationship between age, ethnicity and health conditions experienced by a particular population or occupational area experiencing high levels of stress-producing demands? How can individual and group intervention strategies be combined in an attributional stress management program which includes individual and organizational outcome measures. Stressful demands could be identified for a specific population as could the association between age, ethnicity, and perceived stress. Can factors such as health care costs, employee morale, productivity and long-term program participation be increased through outreach efforts directed toward drop-outs and non-participants?

While it is convenient to conduct an intervention based on the compensatory model, employees who experience many demands have difficulty finding time to participate. The effectiveness of future research would also be improved through
initial efforts to obtain a commitment from management for support (release time, paid attendance, extra long lunch breaks, and rewards). Furthermore, if employers are willing to become involved in the stress management process, the research could focus on identifying and testing methods for reducing organizational stressors such as 1) organizational climate (mistrust, disunity, and disorganization); 2) relationships (role conflict, role ambiguity, interpersonal conflict, and positions with responsibility for others); 3) system maintenance (mental demands, quantitative workload, variance in workload, irregular shiftwork, lack of job control and job future ambiguity); and 4) work design and the person/job interface (physical stressors such as noise, pace of work, and the ergonomic interface between the job, the machine and the employee).

The Attribution Inventory developed for this study was also very lengthy. It is recommended that a shorter version, including areas specific to the target population, be tested in future research studies. It is also suggested that future researchers spread out the administration of the entire occupational stress inventory over several weeks to insure higher completion rates and future program participation.

The entire project was designed specifically for the target population of merit employees in engineering related occupations. This process was an effective way to identify stressors, stress response outcomes, and individual characteristics specific to the target population. Since the association between relevance and motivation to participate has been established, future researcher efforts would be improved by gathering information from the population prior to designing the interventions. The
sample involved in this study indicated that the intervention content was interesting and relevant to their everyday concerns. Matching individual characteristics with intervention strategies is an effective strategy for facilitating motivation and participation that may improve participation in future researcher projects as well.

Future studies could investigate some of the findings in more detail. A longitudinal study designed to investigate the long-term effects of stress management interventions on stress response outcomes is recommended. Factors related to stress response outcomes that warrant consideration include cultural or class risk factors for health conditions; prevalence of health conditions; and interventions designed specifically to reduce the occurrence or negative impact of stress-related health conditions.

Recommendations for Practice

Results from this study can facilitate employers or researchers who are planning to design, implement, and evaluate an occupational stress management intervention. Results of this study clearly indicate the relevance of gathering information from the target population regarding individual characteristics. Relevant information includes background, temperament, preferred format, perceived demands, and stress response outcomes. It is also important to determine readiness for behavioral change, to match intervention strategies with individual characteristics, and to provide an opportunity for subjects to receive training that is closely related to the preferred format. Attribution training is a recommended technique for reducing
employee stress responses, and all programs are ethically responsible for including assessments of organizational demands and interventions to remove or restructure stress producing demands in the organization structure and climate.

Programs could have a broader appeal if efforts are made to contact individuals who are not ready for behavioral change, and to provide them with information which will facilitate understanding of stressors, stress responses, and stress management to increase readiness for behavioral change. A more personalized and individual interaction is recommended initially so as to insure mutual communication of needs and services available. As the individuals progress along the readiness stages, appropriate information and activities could be provided. By maintaining an ongoing relationship with this population, future participation in the stress management interventions (SMI) might be increased. Similarly, it is recommended that follow-up be conducted on SMI participants and dropouts in order to gather information useful for providing appropriate training for this population. Future programs could also improve participation and outcome measures by using a combination of models that include varying degrees of reinforcement and required attendance for specific personnel when indicated by self-reported stress claims or low productivity.

Administrations would be well advised to include consultation with management concerning organizational factors that contribute to occupational stress. Relevant topics for consideration in worksite programs include environmental climate,
physical conditions, workload demand, convenient exercise facilities, available sources to meet balanced nutrition needs, and general support from the administration for stress management interventions. Without full participation by the highest level of administration, stress management programs that concentrate primarily on employee behaviors and attitudes serve only to mask awareness of occupational conditions that create the demands on workers. It might prove beneficial to compare participants and non-participants as suggested by Stange and associates (1991).

Finding solutions to stress related problems in the workplace is a reciprocal process whereby both employers and employees are accountable. Employees must try their best to perform the required duties within the required organizational context, and employers are responsible for providing the best organizational climate possible. If the organization is not committed to improving conditions in the workplace, the stress management interventions that focus on individual behavioral change will have only limited results and may even be harmful since they often tend to divert attention away from focusing on reconstructing situations to reduce demands.

Concluding Statement

In conclusion, it is noted that when this project was initiated, the company was undergoing administrative and organizational changes. The effects of stress-producing demands were identified by the survey instrument although it cannot be said that the full extent and magnitude of stressors were measured and controlled. Organizational changes such as reorganization and promotions created high demands on the
participants. Inner office promotions created new opportunities, expectations and duties for some individuals, while creating uncertainty and increased workload for others. When positions remained unfilled following promotion or retirement, the remaining staff had to perform the entire workload. The hierarchy of office responsibility remained undefined in some cases which created a climate of uncertainty for the workers. Administrative pressure for productivity, while understandable, created extensive demands on employees for productivity goals that were unattainable in a regular forty-hour week. This was apparent by the large number of subjects who reported heavy mental and quantitative workload demands. The predominant temperament type reinforced an organizational commitment to complete all work assignments, which was unrealistic considering workload and time restraints. Consequently, employees were expected to work longer hours. Longer hours and increased demands reduced efficiency and compounded productivity problems.

It is commendable that the Hawaiian Electric Company (HECO) not only became aware of stress-producing conditions impacting productivity and employee health, but also took steps to resolve those problems. Approval was given for implementation of this research project. Furthermore, the recommendations from outside consultants were initiated, and a new Senior Vice President was hired to address the consultant’s concerns. HECO thereby set a precedent for other similar
companies by demonstrating the process of identifying individual and organizational demands, and enacting efforts which address individual and organizational outcomes.
**APPENDIX A: OCCUPATIONAL STRESS INVENTORY**

1. **In the area(s) where I usually work:**
   - a. the level of noise is high ........................................ 0 0
   - b. the level of lighting is usually poor ............................ 0 0
   - c. the temperature is comfortable ........................................ 0 0
   - d. the level of air circulation is good ............................ 0 0
   - e. the air is clean and free of pollution ................................. 0 0
   - f. I am protected from exposure to dangerous substances (e.g. high voltage, chemicals) ........................................ 0 0
   - g. the workers are very crowded ........................................ 0 0
   - h. the overall quality is poor ........................................ 0 0

2. **Using the scale below, indicate how often you do the following at work.**
   - a. make a plan to solve the problem and stick to it ........ 0 0 0 0 0
   - b. go on as if nothing has happened ........................................ 0 0 0 0 0
   - c. feel responsible for the problem ........................................ 0 0 0 0 0
   - d. daydream or wish that you could change the problem .......... 0 0 0 0 0
   - e. talk to your boss or co-workers about the problem ........ 0 0 0 0 0
   - f. become more involved in activities outside of work ........ 0 0 0 0 0

3. **Please indicate the degree to which you agree with the following statements about your job using the following scale:**
   - a. My job requires a great deal of concentration ........ 0 0 0 0
   - b. My job requires me to remember many different things .... 0 0 0 0
   - c. I must keep my mind on my work at all times ........ 0 0 0 0
   - d. I can take it easy and still get my work done ........ 0 0 0 0
   - e. I can let my mind wander and still do the work ........ 0 0 0 0

4. **Does your job primarily involve providing direct service to specific groups of people or client populations ........ 0 0 0 0

5. **Your job exposes you to verbal abuse and client confrontation** 0 0 0 0

6. **Your job exposes you to physical threat or harm ........ 0 0 0 0

7. **How often have you been physically assaulted in the last year** 0 0 0 0

8. **How often does your job subject you to personal liability? ** 0 0 0 0
This section involves various aspects of your work activities. Indicate how much of each aspect you have on your job by writing a number in the space provided based on the scale below.

### 1. How much of the following do you experience at work:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Hardly Any</th>
<th>A Little</th>
<th>Some</th>
<th>A Lot</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. slowdown in the work load</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>b. time to contemplate</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>c. demanding work load</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>d. time to do your work</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>e. responsibility for the future of others</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>f. responsibility for the job security of others</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>g. responsibility for the morale of others</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>h. responsibility for the welfare of others</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

### 2. How many of the following do you have at work:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Hardly Any</th>
<th>A Little</th>
<th>Some</th>
<th>A Lot</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. projects, assignments or tasks</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>b. lulls between heavy work load periods</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>c. demands and expectations from others to do work</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

### 3. How many times are you required to do the following:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Hardly Any</th>
<th>A Little</th>
<th>Some</th>
<th>A Lot</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. work very fast</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>b. work very hard</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>c. work with little time to get things done</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>d. perform a great deal of work</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>e. dramatically increase the amount of work performed</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>f. dramatically increase the amount of concentration</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>g. dramatically increase how fast you have to think</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>h. use the skills you learned in school at work</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>i. given the chance to do the things you do best</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>j. able to use the skills from your previous experience and training</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
**The next series of questions asks how much influence you have in several areas of your job. By influence we mean the degree to which you control what is done by others at work and have freedom to determine what you do independently at work.**

1. **How much influence do you have over the:**

<table>
<thead>
<tr>
<th>Area</th>
<th>Very Little</th>
<th>Little</th>
<th>A Moderate Amount</th>
<th>Much</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. variety of tasks you perform</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. availability of supplies and equipment you need at work</td>
<td></td>
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<tr>
<td>c. order in which you perform tasks at work</td>
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<tr>
<td>d. the amount of work you do</td>
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<tr>
<td>e. the pace of your work (how fast or slow you work)</td>
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<tr>
<td>f. the quality of work you do</td>
<td></td>
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<tr>
<td>g. the arrangement and decoration of your work area</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>h. assignment of tasks to individuals at work</td>
<td></td>
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</tr>
<tr>
<td>i. the hours or schedule that you work</td>
<td></td>
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<tr>
<td>j. decisions about when things will be done in your unit</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>k. policies, procedures and performance in your unit</td>
<td></td>
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<tr>
<td>l. the availability of materials you need to do your work</td>
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<tr>
<td>m. training of other workers in your unit</td>
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<tr>
<td>n. arrangement of furniture and other work equipment</td>
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<td></td>
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<tr>
<td>o. take breaks when finishing work ahead of schedule</td>
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<tr>
<td>p. general work and work-related factors</td>
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</tr>
</tbody>
</table>

2. **How accurate are each of the following statements in describing your job?**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Very Inaccurate</th>
<th>Slightly Inaccurate</th>
<th>Uncertain</th>
<th>Slightly Accurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I feel certain about how much authority I have</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>b. There are clear, planned goals and objectives for my job</td>
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<tr>
<td>c. I have to do things that should be done differently</td>
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<tr>
<td>d. I know that I have divided my time properly</td>
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<tr>
<td>e. I receive an assignment without the help I need to do it</td>
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<tr>
<td>f. I know what my responsibilities are</td>
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<tr>
<td>g. I have to bend or break rules to complete assignments</td>
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<tr>
<td>h. I work with two or more groups who operate differently</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>i. I know exactly what is expected of me</td>
<td></td>
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<tr>
<td>j. I receive incompatible requests from two or more people</td>
<td></td>
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<tr>
<td>k. Things I do may be accepted by one person and not another</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>l. I get assignments without adequate resources to do them</td>
<td></td>
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<tr>
<td>m. Explanation is clear about what has to be done on my job</td>
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<tr>
<td>n. I work on unnecessary things</td>
<td></td>
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</tbody>
</table>
The next four questions ask you to evaluate your feelings about your job in relationship to other jobs you might be able to get. Please respond to each item by placing a check mark next to the response that best indicates your feelings about the question.

1. How easy would it be for you to find a suitable job with another employer? ...........................................  

2. How easy would it be to find a job as good as the one you now have with another employer? ..................  

3. How would you describe the number of available jobs, with all types of employers, for a person with your qualifications? ..  

4. How likely is it that you would have to move out of your local area to find a suitable job with another employer? .......  

In the future, some jobs will be changing while others will be staying the same. Here are some questions which deal with this topic.

5. How certain are you about:  
   a. what your future career picture looks like ..................  
   b. future opportunities for promotion and advancement ...  
   c. your job skills being useful five years from now ........  
   d. what your responsibilities will be 6 months from now  
   e. that you could support yourself if you lost your job ....  
   f. that you are satisfied with your job ......................  

6. If you had to decide all over again, which would you choose:  
   a. take the same job  
   b. not sure  
   c. take a different job  

7. Would you recommend your job to a friend who was interested?  
   a. highly recommend it  
   b. have doubts  
   c. advise against it

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This portion contains items that are related to your health.

1. **How often have you experienced the following in the past month:**
   - a. Your face became hot (not in a hot room or exercising)  
   - b. You perspired excessively (not in a hot room/exercising)  
   - c. Your mouth became dry  
   - d. Your muscles felt tight and tense  
   - e. You were bothered by a headache  
   - f. You felt as if the blood were rushing to your head  
   - g. You felt a lump in your throat or a choked-up feeling  
   - h. Your hands trembled enough to bother you  
   - i. You had shortness of breath (not working hard/exercising)  
   - j. You were bothered by your heart beating hard  
   - k. Your hands sweated so that you felt damp and clammy  
   - l. You had spells of dizziness  
   - m. You had an upset stomach or stomach ache  
   - n. You were bothered by your heart beating  
   - o. You were in ill health which affected your work  
   - p. You had a loss of appetite  
   - q. You had trouble sleeping at night

<table>
<thead>
<tr>
<th>Never</th>
<th>Occasionally</th>
<th>Sometimes</th>
<th>Fairly Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

2. **Within the past twelve months, has a doctor ever treated you for, or told you that you had:**
   - a. Diabetes  
   - b. Cancer  
   - c. Hernia or rupture  
   - d. Tuberculosis  
   - e. Asthma  
   - f. "High" blood pressure  
   - g. Heart Disease  
   - h. Arthritis  
   - i. Epilepsy  
   - j. Glaucoma  
   - k. Paralysis, tremor, or shaking  
   - l. Kidney or bladder trouble  
   - m. Lung or breathing problems  
   - n. Stroke  
   - o. Anemia  
   - p. Gall Bladder, liver, or pancreas trouble  
   - q. Thyroid trouble or goiter  
   - r. Insomnia  
   - s. Gastritis  
   - t. Colitis  
   - v. Stomach ulcer  
   - w. Alcoholism  
   - x. Emotional problems  
   - y. Back problems

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
1. Please answer the following questions about your work situation.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Neither</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. There is harmony within my group</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>b. We bicker a lot over who should do what job in my group</td>
<td></td>
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</tr>
<tr>
<td>c. There is difference of opinion among members of my group</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>d. There is dissension in my group</td>
<td></td>
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<tr>
<td>e. Our group is supportive of each other's ideas</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>f. There are clashes between subgroups within my group</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>g. There is friendliness among members of my group</td>
<td></td>
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</tr>
<tr>
<td>h. There is &quot;we&quot; feeling among members of my group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. There are disputes between my group and other groups</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>j. There is agreement between my group and other groups</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>k. Other groups withhold information necessary for our tasks</td>
<td></td>
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</tr>
<tr>
<td>l. The relationship between my group and other groups is harmonious in attaining the overall organization goals</td>
<td></td>
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</tr>
<tr>
<td>m. There is lack of assistance between my group and others</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>n. There is cooperation between my group and other groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o. There are personality clashes between my group and others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p. Other groups create problems for my group</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

2. How much does each of these people go out of their way to do things to make your work life easier?

<table>
<thead>
<tr>
<th>Person</th>
<th>No Such Person</th>
<th>Not at All</th>
<th>A Little</th>
<th>Somewhat</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Your immediate supervisor (boss)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Other people at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Your spouse, friends and relatives</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

3. How easy is it to talk to each of the following people?

<table>
<thead>
<tr>
<th>Person</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Your immediate supervisor (boss)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Other people at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Your spouse, friends and relatives</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

4. How much can each of these people be relied on when things get tough at work?

<table>
<thead>
<tr>
<th>Person</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Your immediate supervisor (boss)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Other people at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Your spouse, friends and relatives</td>
<td></td>
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</tr>
</tbody>
</table>

5. How much is each of the following willing to listen to your personal problems?

<table>
<thead>
<tr>
<th>Person</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Your immediate supervisor (boss)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Other people at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Your spouse, friends and relatives</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
1. On an average day, how many of the following do you smoke?
   a. ___ Cigarettes
   b. ___ Cigars
   c. ___ Pipefuls of Tobacco

2. How many job accidents have you had (last 6 months)? ___

3. How many sick leave days did you have in the last month? ___

4. How often did you experience the following in the last week:
   
   | I was bothered by things that usually don’t bother me | o | o | o |
   | I did not feel like eating; my appetite was poor       | o | o | o |
   | I couldn’t shake off the blues even with help          | o | o | o |
   | I felt that I was just as good as other people          | o | o | o |
   | I had trouble keeping my mind on what I was doing      | o | o | o |
   | I felt depressed                                       | o | o | o |
   | I felt that everything I did was an effort             | o | o | o |
   | I felt hopeful about the future                        | o | o | o |
   | I thought my life had been a failure                   | o | o | o |
   | I felt fearful                                         | o | o | o |
   | My sleep was restless                                  | o | o | o |
   | I was happy                                            | o | o | o |
   | I talked less than usual                               | o | o | o |
   | I felt lonely                                          | o | o | o |
   | People were unfriendly                                 | o | o | o |
   | I enjoyed life                                         | o | o | o |
   | I had crying spells                                    | o | o | o |
   | I felt sad                                            | o | o | o |
   | I felt that people disliked me                         | o | o | o |
   | I could not get “going”                                 | o | o | o |

5. During the past month have you experienced:
   
   | Cold or flu symptoms                                   | o | o | o |
   | Hayfever or allergy symptoms                           | o | o | o |
   | Allergic skin rash                                     | o | o | o |
   | Slow healing wounds                                    | o | o | o |
   | Cold sores or fever blisters                           | o | o | o |
   | Arthritis symptoms (swollen or painful joints)         | o | o | o |
   | Other illness                                          | o | o | o |

6. What is your ethnic background? (check all that apply)
   a. ☐ Black
   b. ☐ Caucasian
   c. ☐ Chinese
   d. ☐ Filipino
   e. ☐ Hispanic (not Caucasian)
   f. ☐ Hawaiian/Part Hawaiian
   g. ☐ Japanese
   h. ☐ Korean
   i. ☐ Pacific Islander

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1. Please indicate the degree to which each of the following are true or false as they apply to you.

<table>
<thead>
<tr>
<th></th>
<th>Definitely</th>
<th>Mostly</th>
<th>Don't Mostly</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I am more restless and fidgety than most people</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>b. I ordinarily work quickly and energetically</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>c. I am rather deliberate in telephone conversations</td>
<td></td>
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<tr>
<td>d. I am often in a hurry</td>
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<tr>
<td>e. In conversation I often gesture with hands and head</td>
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<tr>
<td>f. I rarely drive a car too fast</td>
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<tr>
<td>g. As a child, I preferred work where I could move around</td>
<td></td>
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<tr>
<td>h. People consider me to be rather quiet</td>
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<tr>
<td>i. I usually speak more softly than other people</td>
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<td>j. My handwriting is rather fast</td>
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<tr>
<td>k. I often work slowly and leisurely</td>
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<tr>
<td>l. I prefer to linger over a meal</td>
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<tr>
<td>m. I like to drive a car fast when there's no speed limit</td>
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<tr>
<td>n. I like work that is slow and deliberate</td>
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<tr>
<td>o. I talk more slowly than most people</td>
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<tr>
<td>p. I often let a problem work itself out by waiting</td>
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<tr>
<td>q. I often try to persuade others to my point of view</td>
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<tr>
<td>r. I generally walk more slowly than most people</td>
<td></td>
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<tr>
<td>s. I eat rapidly even when there is plenty of time</td>
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<tr>
<td>t. I usually work quickly</td>
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</tbody>
</table>

2. How do you feel about the following?

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. On the whole, I am satisfied with myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>b. I feel I do not have much to be proud of</td>
<td></td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>c. I certainly feel useless at times</td>
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<tr>
<td>d. I'm a person of worth (at least equal to others)</td>
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<tr>
<td>e. I feel that I have a number of good qualities</td>
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<tr>
<td>f. All in all, I am inclined to feel that I am a failure</td>
<td></td>
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</tr>
<tr>
<td>g. I wish I could have more respect for myself</td>
<td></td>
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<tr>
<td>h. I am able to do things as well as most other people</td>
<td></td>
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</tr>
<tr>
<td>i. At times I think I am no good at all</td>
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<tr>
<td>j. I take a positive attitude toward myself</td>
<td></td>
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<td>0</td>
</tr>
</tbody>
</table>

3. I work on another job in addition to this one |   | 0 |
4. I have children at home |   | 0 |
5. I have primary responsibility for childcare duties |   | 0 |
6. I have primary responsibility for housecleaning |   | 0 |
7. I regularly care for an elderly/disabled person |   | 0 |
8. I am going to school (credit classes for a degree) |   | 0 |
9. I spend 5-10 hrs in a community group (church, etc.) |   | 0 |
The following set of questions involves your general background.

1. **What is your sex?**
   a. ○ Male
   b. ○ Female

2. **What is your height?** ___ feet ___ inches

3. **What is your weight?** ___ pounds

4. **What is your marital status?**
   a. ○ Married or living in a marriage-like arrangement
   b. ○ Married, Separated
   c. ○ Single, Divorced
   d. ○ Single, Widowed
   e. ○ Single, Never Married

5. **How many years of education have you completed?**
   a. ○ 10
   b. ○ 11
   c. ○ 12
   d. ○ 13
   e. ○ 14
   f. ○ 15
   g. ○ 16
   h. ○ 17
   i. ○ 18
   j. ○ 19
   k. ○ 20
   l. ○ over 20

6. **Indicate the highest degree you have completed:**
   a. ○ High School (GED)
   b. ○ Associate Degree (2 yr)
   c. ○ Bachelors Degree
   d. ○ Masters Degree
   e. ○ Doctorate Degree

7. **What is your religious preference?**
   a. ○ Christian
   b. ○ Buddhist
   c. ○ Mohammedan
   d. ○ Hindu
   e. ○ Jewish
   f. ○ Other:______________________
   g. ○ None, no preference
8. How much do your religious beliefs influence your daily life?
   a. ○ Not at all
   b. ○ Very little
   c. ○ Some
   d. ○ Quite a lot

9. How often do you eat nutritious meals?
   a. ○ Rarely
   b. ○ Sometimes
   c. ○ Often
   d. ○ Daily

10. On an average day, how many alcoholic drinks do you have?
    a. ○ None
    b. ○ 1 or 2
    c. ○ 3 or 4
    d. ○ 5 or more

11. How many hours per week do you spend doing a hobby? ___ hours

12. Your current job title is: ________________________________

13. How long have you worked in this job? ___ years ___ months

14. You have been employed with this company: ___ years ___ months

15. Check the most appropriate description of your job:
   a. ○ Full-time permanent
   b. ○ Part-time temporary
   c. ○ Full-time temporary
   d. ○ Casual

16. Check the description that comes closest to your present shift
    a. ○ Rotating 8 hour shift
    b. ○ Permanent day shift
    c. ○ Permanent night shift
    d. ○ Rotating 12 hour shift
    e. ○ Permanent evening shift
    f. ○ Other: ________________________________

17. How long have you worked this shift? ___ years ___ months

18. How many hours per week do you work? ___ hours

19. How many hours per week do you work on another job? ___ hours
20. How old were you on your last birthday? ___ years old

21. How many times per week do you participate in stress management techniques (meditation, stretching, prayer, etc.)
   a. ○ 0
   b. ○ 1-2
   c. ○ 3-4
   d. ○ Once daily
   e. ○ Several times daily

22. Have you ever participated in stress management training?
   a. ○ No
   b. ○ Once
   c. ○ Several Times
   d. ○ Many times

23. How valuable do you feel most stress management programs are?
   a. ○ Not Very Valuable
   b. ○ Somewhat Valuable
   c. ○ Very Valuable

24. If your employer offered a stress management course designed specially for your company, would you be interested in attending?
   a. ○ No
   b. ○ Not Sure
   c. ○ Maybe
   d. ○ Definitely

25. Which type of course format would you prefer?
   a. ○ Workbook and audio tape that I could work on independently
   b. ○ Group sessions
   c. ○ Group sessions with workbook and audio tape

26. Your family’s total income for last year was:
   a. ○ Under $30,000
   b. ○ $30,000 - $49,999
   c. ○ $50,000 - $69,999
   d. ○ $70,000 - $89,999
   e. ○ $90,000 - 109,999
   f. ○ Over $110,000
ATTRIBUTION PATTERN ASSESSMENT INVENTORY

As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Lei was a new employee with the Electric Company and had been working on a Distribution Field Crew for only a couple of days when the crew arrived at the scene of a structure fire. It was a stormy night, with heavy rain and strong winds. The heavy lines had knocked down a pole that was termite infested. The fire had been caused by a downed line at the rear of the structure. While the crew was working to de-energize the line, Lei and Kalani heard screams for help. Kalani had been working on the crew for seven years. As Lei attempted to gain entry into the building in order to render aid, flames began shooting out through the windows. Kalani told her to retreat as flames engulfed the structure, ending the screams of terror. After the fire was put out, Lei couldn’t control her sobbing and felt despair. She had no idea that her job could involve that type of situation, and was not prepared for the shock of someone dying.

1. The problems described above were primarily due to:
   a. The Supervisor ..................................  
   b. Kalani ...........................................
   c. Forces Beyond Control ..........................
   d. The Training Department ......................
   e. The Firm ........................................
   f. Lei’s attitude, skills and effort .............

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td>○</td>
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</table>

2. The best solutions to the problems described above include:
   a. The Supervisor is more thorough .........
   b. Kalani provides more support ............
   c. A Safety Consultant is hired ............
   d. Better training is provided ..............
   e. The Company changes policy ..............
   f. Lei improves herself ......................

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
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<td>○</td>
<td>○</td>
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</table>

3. Check only one item below that you feel is the most accurate.
   ○ Lei is responsible for the problem and the solution.
   ○ Lei is responsible for the solution, not the problem.
   ○ Lei is not responsible for the solution or the problem.
   ○ Lei is responsible for the problem, not the solution.

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As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Sachie is an office manager. She is responsible for 10 clerical staff and the work schedules for 40 engineers. Her duties also include using the computer for CAD designs, calculations, spreadsheets and word processing. Her job is very demanding, and she often feels rushed at work. Although she frequently works overtime, and takes work home every weekend, there is always more for her to do. Her supervisor, Nobu, told her not to worry so long as she tries her best. However, she worries anyway. She enjoys eating rich, fatty foods, and desserts. She also likes going out for a few drinks whenever her friend Kimi invites her, even though her doctor said that adds to her weight problem. Because she has so much work to do, she is unable to exercise on a regular basis. She remains about 30 pounds overweight. She has strained her back twice while moving boxes of computer paper.

1. The problems described above were primarily due to:
   a. The Supervisor, Nobu ...............  
   b. Her friend, Kimi .....................  
   c. Forces Beyond Control ...............  
   d. The Doctor ..........................  
   e. The Firm ...........................  
   f. Sachie’s attitude, skills and effort ....

2. The best solutions to the problems described above include:
   a. The Supervisor helps Sachie ..........  
   b. Kimi stops asking Sachie out .........  
   c. A Safety Consultant is hired ..........  
   d. Better training is provided ..........  
   e. The Company changes policy ..........  
   f. Sachie improves herself .............

3. Check only one item below that you feel is the most accurate.
   ○ Sachie is responsible for the problem and the solution.
   ○ Sachie is responsible for the solution, not the problem.
   ○ Sachie is not responsible for the solution or the problem.
   ○ Sachie is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional, and any resemblance to real people is merely coincidental.

Gemma was recently hired as a supervisor in the Environmental Department Laboratory. Her job was very demanding. It was difficult for Gemma to adjust at work, and this created problems at home as well. Her administrative duties require a great deal of concentration, and she had to make many decisions involving the welfare of others. Jose, a lab technician, complained about being placed on a rotating shift schedule because it was hard to get used to. He was tired and irritable at work and began to report an increase in accidents. He also complained about numbness in his fingertips, suggesting that the cause was the solvents which were used daily to clean tools and parts. Gemma checked with her supervisor because she was worried about the physical and legal implications. He said to just wait and see what happens before making any changes.

1. The problems described above were primarily due to:
   a. Gemma's Supervisor
   b. Jose
   c. Forces Beyond Control
   d. The Firm
   e. Gemma's Family
   f. Gemma's attitude, skills and effort

2. The best solutions to the problems described above include:
   a. Gemma's Supervisor gets stronger
   b. Jose files a grievance
   c. A safety consultant is hired
   d. Safe employees get a bonus
   e. Gemma’s Family becomes supportive
   f. Gemma improves herself

3. Check only one item below that you feel is the most accurate.
   o Gemma is responsible for the problem and the solution.
   o Gemma is responsible for the solution, not the problem.
   o Gemma is not responsible for the solution or the problem.
   o Gemma is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Bill has worked in the purchasing department for the past twenty years. He has always been willing to work hard and fast provided that he was familiar with the duties required of him. Recently, there have been changes in his department due to company expansion, and his job has changed a lot. When his co-worker, Mary, recently took an early retirement, no one was hired in her place. Consequently, Bill is now required to do Mary’s duties as well. Bill’s manager also wants him to go for additional training so he can learn new and more efficient ways of doing things. Bill is having a very difficult time because he has been very comfortable for many years and does not want to change. He also finds it very difficult to learn new procedures and concepts. Bill’s wife told him he should just retire because change is too hard for him at his age.

1. The problems described above were primarily due to:
   a. Bill’s Supervisor
   b. Mary
   c. Forces Beyond Control
   d. The Firm
   e. Bill’s Wife
   f. Bill’s attitude, skills & effort

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<th>Strongly Agree</th>
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<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<tbody>
<tr>
<td>a. Bill’s Supervisor</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>b. Mary</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>c. Forces Beyond Control</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>d. The Firm</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>e. Bill’s Wife</td>
<td>O</td>
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<tr>
<td>f. Bill’s attitude, skills &amp; effort</td>
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</table>

2. The best solutions to the problems described above include:
   a. The Supervisor provides training
   b. The other workers support Bill
   c. A training consultant is hired
   d. Training bonuses are awarded
   e. Bill’s wife becomes supportive
   f. Bill improves himself

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<th>Strongly Agree</th>
<th>Agree</th>
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<th>Disagree</th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. The Supervisor provides training</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>b. The other workers support Bill</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>O</td>
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<tr>
<td>c. A training consultant is hired</td>
<td>O</td>
<td>O</td>
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<tr>
<td>d. Training bonuses are awarded</td>
<td>O</td>
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<tr>
<td>e. Bill’s wife becomes supportive</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>f. Bill improves himself</td>
<td>O</td>
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</tbody>
</table>

3. Check only one item below that you feel is the most accurate:
   ○ Bill is responsible for the problem and the solution.
   ○ Bill is responsible for the solution, not the problem.
   ○ Bill is not responsible for the solution or the problem.
   ○ Bill is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Fale has been an accountant in the Capital Budget Department for the past six months. She had related experience in Samoa, but this was her first job in Hawaii. She has already become familiar with all the employment policies and practices, although there are still various aspects of her job that she has to learn. She has tried to be friendly, but she still doesn't get support from the other staff. When Fatu, her supervisor, assigned her four new projects, it seemed that he was giving her too much. She didn't think it was going to be that hard. In addition, she was having trouble with her teenage son, and her husband was not helping out with any of the household chores. She was afraid to say anything because she knew that she would be unable to find another job as good as this one, and she really needed the money. So, she decided to just hold it inside and try to make do.

1. The problems described above were primarily due to:
   a. Fale’s Supervisor, Fatu ............
   b. The Other Staff in Her Office .......
   c. Forces Beyond Control ............
   d. The Firm ........................
   e. Fale’s Husband and Son ..........
   f. Fale’s attitude, skills and effort ....

2. The best solutions to the problems described above include:
   a. Fale’s Supervisor helps her ........
   b. The Other Staff become supportive ...
   c. A management consultant is hired ...
   d. Employees get more bonuses ........
   e. Fale’s Family becomes supportive ... 
   f. Fale improves herself ............

3. Check only one item below that you feel is most accurate:
   ○ Fale is responsible for the problem and the solution
   ○ Fale is responsible for the solution, not the problem.
   ○ Fale is not responsible for the solution or the problem.
   ○ Fale is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Kimo has worked in Maintenance for seven years. One day, his supervisor asked him to troubleshoot a transformer in the warehouse with Pua, a new recruit. As Kimo began to work on the transformer, it burst into flames, knocking him unconscious. Pua tried to drag Kimo out of the warehouse, but she was unable to get Kimo out before the building was filled with smoke. Pua ran out of the building to get assistance. Company policy required that an investigation of all occupational injuries be conducted in house. The investigation conducted by the Safety Division determined that Kimo was responsible. After the investigation, the Supervisor was pleased with the determination. However, the bargaining unit employees felt that the investigation was unfair because they always seem to place blame on the Bargaining Unit employees.

1. The problems described above were primarily due to:
   a. The Supervisor
   b. Pua
   c. Forces Beyond Control
   d. The Operating Division
   e. The Safety Division
   f. Kimo's attitude, skills and effort

2. The best solutions to the problems described above include:
   a. The Supervisor does a better job
   b. Training is provided
   c. A Safety Consultant is hired
   d. Safe employees get more bonuses
   e. The Company changes policy
   f. The workers improve themselves

3. Check only one item below that you feel is the most accurate.
   ○ Kimo is responsible for the problem and the solution
   ○ Kimo is responsible for the solution, not the problem.
   ○ Kimo is not responsible for the solution or the problem.
   ○ Kimo is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Hideo is a senior engineer responsible for 12 engineers and their projects. His job is very demanding. He constantly pushes himself to accomplish more, and seems to be in a hurry all the time. His doctor informed him that because his cholesterol level is high and he has high blood pressure, he should try not to get too excited. Hideo’s boss called him early one morning about an important meeting. Hideo left for work 30 minutes early that day. After being on the freeway for 10 minutes, traffic became very congested. It occurred to him that he would be late, so he tried to change lanes. A woman driving a blue Mercedes sped up and cut him off. Hideo felt the growing anger as his muscles tensed and sweat dripped from his forehead. When Hideo’s lane cleared, he saw a chance to get even. As he quickly turned into the next lane, the woman in the blue Mercedes slammed right into him. Hideo was late for work and missed the meeting.

1. The problems described above were primarily due to:
   a. The Supervisor
   b. Hideo’s Boss
   c. Forces Beyond Control
   d. The Woman Driver
   e. The Firm
   f. Hideo’s attitude, skills and effort

<table>
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<tr>
<th>Strongly Agree</th>
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<th>Disagree</th>
<th>Strongly Disagree</th>
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2. The best solutions to the problems described above include:
   a. The Supervisor does a better job
   b. Hideo’s Doctor helps him change
   c. A Management Consultant is hired
   d. The Boss gives Hideo a raise
   e. A Stress Consultant is hired
   f. Hideo improves himself

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
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</table>

3. Check only one item below that you feel is the most accurate.
   o Hideo is responsible for the problem and the solution.
   o Hideo is responsible for the solution, not the problem.
   o Hideo is not responsible for the solution or the problem.
   o Hideo is responsible for the problem, not the solution.
As you read the following story, imagine that you are the main character. This story is fictional and any resemblance to real people is merely coincidental.

Betty has been in the Customer Service Department for many years. Recently, John was hired as the new Manager. He began to reorganize the department without consulting anyone. This created a lot of strain on everyone because he changed the job descriptions and even required people to rotate between jobs. He said that it would keep people from stagnating and getting bored. He also said that everyone could learn more about the whole operation that way. This made Betty really mad because she felt he was too young to know anything and she liked things the way they used to be. She also felt strongly that John should involve other staff in important decisions. The other workers in her department didn’t want to complain to John. When Betty talked privately about John to the workers in the other departments in the division, they agreed with her. However, no one would support her in group discussions.

1. The problems described above were primarily due to:
   a. The Supervisor, John ............... ○ ○ ○ ○ ○
   b. The other Customer Service Staff ........ ○ ○ ○ ○ ○
   c. Forces Beyond Control .............. ○ ○ ○ ○ ○
   d. Workers in other Departments ........ ○ ○ ○ ○ ○
   e. The Firm ................................ ○ ○ ○ ○ ○
   f. Betty’s attitude, skills and effort .......... ○ ○ ○ ○ ○

2. The best solutions to the problems described above include:
   a. The Supervisor works with staff ........ ○ ○ ○ ○ ○
   b. The other staff become assertive ....... ○ ○ ○ ○ ○
   c. A Management Consultant is hired ....... ○ ○ ○ ○ ○
   d. Other departments become assertive .. ○ ○ ○ ○ ○
   e. The Firm changes policy ............... ○ ○ ○ ○ ○
   f. Betty improves herself .............. ○ ○ ○ ○ ○

3. Check only one item below that you feel is the most accurate.
   ○ Betty is responsible for the problem and the solution.
   ○ Betty is responsible for the solution, not the problem.
   ○ Betty is not responsible for the solution or the problem.
   ○ Betty is responsible for the problem, not the solution.
Please complete the Keirsey Temperament Sorter. After you have answered all 70 questions and scored your responses, return the entire inventory to your departmental secretary.

MAHALO!
APPENDIX B: STRESS MANAGEMENT INTERVENTION

Participants in the Independent format group received pamphlets on Stress and Stress management from the Crammes Publishing Company and from the State of Hawaii Department of Health. Participants also received an audio tape which presented verbal exercises with a background of music. Participants in the Combination format also received the pamphlets and the tape. Subjects in the Group format were exposed to the materials in the sessions, but were not given copies to take home.

The two month program (Group and Combination) consisted of four two-hour sessions (offered two weeks apart). Each session began with an ice breaker activity to facilitate participation and make everyone feel comfortable. One example of ice breaker is the "name game" which requires everyone to give himself/herself a positive, self-descriptive adjective. Each person repeats the name and adjective of those who have gone before until all the names have been repeated.

The second part of each session involved information about stress. Information was dispensed through video presentations and orally. The information which was provided included a description of the stress process including sources of stress, stress response outcomes. So that researchers can replicate the study, some of the information which was provided to subjects has been included as follows. Stress is a natural part of life in an industrialized society like we live in. Demands are made on us from people, tasks and machines at work, as well as from our perceived obligations to family and community members. We also pressure ourselves,
internally, with expectations about how things ought to be... by being ambitious, committing ourselves to more than common sense tells us we can handle, feeling obligated and by taking responsibility for the actions of others. Life would be so much easier if we could only learn to cope effectively with all these sources of stress.

We all want to be happy, but who is really happy all of the time? Why can’t we really be happy? Maybe we think that happiness depends on "getting what we want" or "doing what we should". However, just about everything that we desire is transient, subject to change and, therefore, only temporary. If we only struggle for things that are inevitably subject to change, we are doomed to suffer because they will not last forever. The new car gets a scratch, the new house has a mortgage, the person in our life has personality characteristics that we don’t like. People, places and things can change and usually do. If we "think" that we will be happy because of something outside of ourself, we are bound to suffer the rest of our life. In this sense, what we think is the cause of our temporary happiness and ultimate suffering.

We have experienced happiness in the past, the experience is within us. Once the object of desire has been attained, the mind can rest, at least temporarily, until the next desire arises. In other words, happiness actually results from peace of mind, not from achieving the fruits of our actions. In order to have lasting happiness, it is necessary to control the mind’s activity.

Wellness is a way of life, and you are your own best resource. The trick is to take care of yourself first. If you try your best all the time, at least your conscience
is clear. There are many forces and factors operating in this world which govern the way things turn out. **We have no control over these forces!** We only have control over our own mind and body. If we always try our best, we can accept the reality that the consequence of our actions is beyond our control. This notion may seem somehow contrary to what you have been taught all your life. Society tells us that we are evaluated by the end product. Did you get the promotion, the house, the car, the right person in your life. However well this system works to perpetuate society, it does not serve the individual!

Whatever works for you is an experience, not a concept or mere thought. Many of us feel an obligation to "help" or "impress" others, and this creates a lot of stress. Often times we share only thoughts or ideas which actually have limited power. However, when you share an experience that works for you, there is life. If you know something that can save another person from suffering, you want to share. In other words, you do it for yourself, because your conscience bothers you. As long as you pass on what works for you, the others can take it or leave it... up to them.

Everyone has a different mind. All you can do is try your best. The results or consequences of your actions are up to other powers, higher powers if you will. So, the trick is to try your best and get the experience first, and focus the mind on a place inside that is peaceful. The following activity incorporates basic stress management techniques for focusing the mind in order to achieve peace and happiness. This part
of the workshop has been designed to provide you with opportunities to experience peace of mind and relaxation.

The third part of the sessions involved systematic relaxation exercises. Subjects were given an opportunity to actually experience relaxation through a variety of techniques either orally or by audio tape with soothing music in the background. Some examples of the techniques used have been included as follows.

Sit comfortably...spine straight...hands resting naturally in your lap. Imagine, think and feel that your eyes are getting very heavy. At the count of three, if you wish to go deeper and deeper relaxed, close your eyes, and your eyelids will be locked together tighter and tighter... 1 your eyes are getting heavier and heavier... 2 your lids are getting heavier and heavier and its going to feel so good to close your eyes so you can go deeper and deeper relaxed... 3 your eyes are closed completely. Turn the focus of your mind inward...toward your inner self. As you sit, try to find a comfortable position... try to find your center so you can be more settled and comfortable. Just let your movements subside and diminish, and you will slowly come to a real stillness and centeredness. Allow yourself to be like a pond that has been stirred up and slowly returns to a calm, smooth surface. Movement diminishes, gradually, in the stillness of this quiet pond. You are a growing, changing entity... unified in mind, body and spirit. Try to find a stillness of the mind, to keep your mind stable and pure. Use your mind to purify your mind... find the path to the spirit.
[Breathing] Concentrate your mind on the base of your spine as you sit. If you’re not sitting straight, try to sit straighter so you can feel each disc moving as you breathe. Think of a gentle uplift from the top of your head so your spine becomes straight without rigid holding. Shift your attention from thoughts to breathing... Place your hands on your stomach. Relax deeper and deeper with each breath... Now, take a slow, deep breath all the way through your diaphragm, making your hands rise (as if there were a balloon in your stomach). Hold it... relax deeper and deeper with each passing second, and release. Take another slow, deep breath... as you inhale, imagine an energy wave entering your body, flowing like water into an empty vessel, filling you with a rainbow of sparkling light. Hold it... now exhale and surround yourself with sparkling energy... no aches... no pains... peace of mind...Breathe naturally.

[Progressive Relaxation] Take another deep, slow breath. Hold your breath and make a fist with both hands and tighten your arms... lift your shoulders up and lean your head back. Breathe out, relax and let go completely. Take another deep, slow breath. Hold it and tighten your scalp, forehead, eyes, nose and mouth... tighten your jaw muscles. Feel the tension, breathe out, relax and let go completely. Take another deep, slow breath...hold it. Tighten your chest, back and stomach muscles... relax and let go completely. Take another deep, slow breath, hold it. Pull your toes upward, tighten your calf and thigh muscles. Feel the tension... let your breath out, relax and let go completely. Take another deep, slow breath. Hold
the breath and tighten every muscle in your body. Increase the tension... hold it... relax and let go completely... breathe naturally.

[Visual Imagery/Autogenic Training] Imagine yourself lying on a beautiful beach. You can hear the sound of the ocean waves pounding on the shore, coming in and going out. They make a sound just like your breath, naturally inhaling and exhaling. The blue ocean greets you. There is a cool breeze blowing, and the palm trees are swaying, providing shade from the sun’s rays. Feel the sun shining down on you, warming your toes and feet. Wiggle your toes and notice the tension. Now, relax and feel the soothing warmth flow up to your calves, shins and thighs to the tip of your spine. The whole lower half of your body is warm and comfortable... Feel the sun shining down on you warming from the top of your head. Your head is warm, comfortable and relaxed. The soothing, warm, relaxing energy is flowing down your neck... through your shoulders to your arms and hands. Your neck, shoulders, arms and hands are warm, comfortable and relaxed. You feel the soothing, warm energy flow down your back, chest and stomach... and now your entire body is warm and relaxed.

The whole body feels very quiet and very serene.

The whole body feels very comfortable and relaxed.

The mind is still.

The mind is quiet.

The mind is easy.
Repeat to yourself:

I am at ease, completely at ease, comfortable and relaxed,

I am still, calm and quiet.

I feel a new sense of well-being.

I feel an inward peace.

I am happy, successful, content,

and living in harmony with everything around me.

Things outside aren’t always what they seem to be. Good can have bad, bad can have good. Find the truth within. With each breath, relax deeper, like the ocean waves. [pause a few seconds]. If you want to go deeper still, just take a deep breath and hold it...Now, exhale and relax, breathing normally. [pause a few seconds]

You can relax any time you want to simply by taking a deep breath. [pause]

On the count of three you will open your eyes slowly, feeling relaxed, happy, comfortable and rejuvenated. You’ll look forward to going still deeper relaxed the next time you try this relaxation exercise. You will be able to sleep at will. You feel confident, happy and at peace. Now, open your eyes, slowly... 1... 2... 3

Relaxation is now over.

Copies of the research materials can be obtained by writing to the author:

Cooperative Education Department, Honolulu Community College, 874 Dillingham Boulevard, Honolulu, Hawaii 96817.
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