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# Examination of the relationship between job stressors , cognitive/affective arousal, and illness among AICPA members: Final report

American Institute of Certified Public Accountants. Insurance Trust Committee

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FINAL REPORT


AN EXAMINATION OF THE RELATIONSHIP BETWEEN JOB STRESSORS,
COGNITIVE/AFFECTIVE AROUSAL, AND ILLNESS AMONG AICPA MEMBERS


Prepared For:

Insurance Trust Committee of the

American Institute of Certified Public Accountants


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members.** (1993).

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# EXECUTIVE SUMMARY

## Purpose

The purpose of this study was, through national mail questionnaire administration, to measure reported stress arousal, stress-related illness, lifestyle behaviors, and sources of job-related stress among members of the American Institute of Certified Public Accountants. Based on these measurements, we undertook an investigation of the roles that job stressors and stress arousal play in reported illness among AICPA members. Based on our findings, we suggested intervention strategies to ameliorate stressors, both job-related and personal.

## Methodology

The design of the present study consisted of a randomized sampling of 4,000 AICPA members from the fields of public accounting, commerce or industry, education, and government. Target members were asked to respond by mail to a research packet consisting of a battery of valid and reliable psychometric instruments designed to measure: 1) job-related stressors; 2) stress arousal; 3) stress-related illness; 4) general illness; and, 5) adaptive and maladaptive lifestyle behaviors. Within the time frame required for inclusion in the study 1,618 individuals responded .

## Results

The empirically derived model which highlights the relationship between job stressors, stress arousal, and illness among the general population of AICPA respondents is presented in Figure I.

As Figure I indicates, the major issue examined in this study was the endpoint of general illness. The results of the present investigation indicate that stress-related illness (and dysfunction) and general illness were correlated: in fact, stress-related illness and dysfunction was

# Figure I

## The Relationship Between Job Stressors, Stress Arousal and Illness
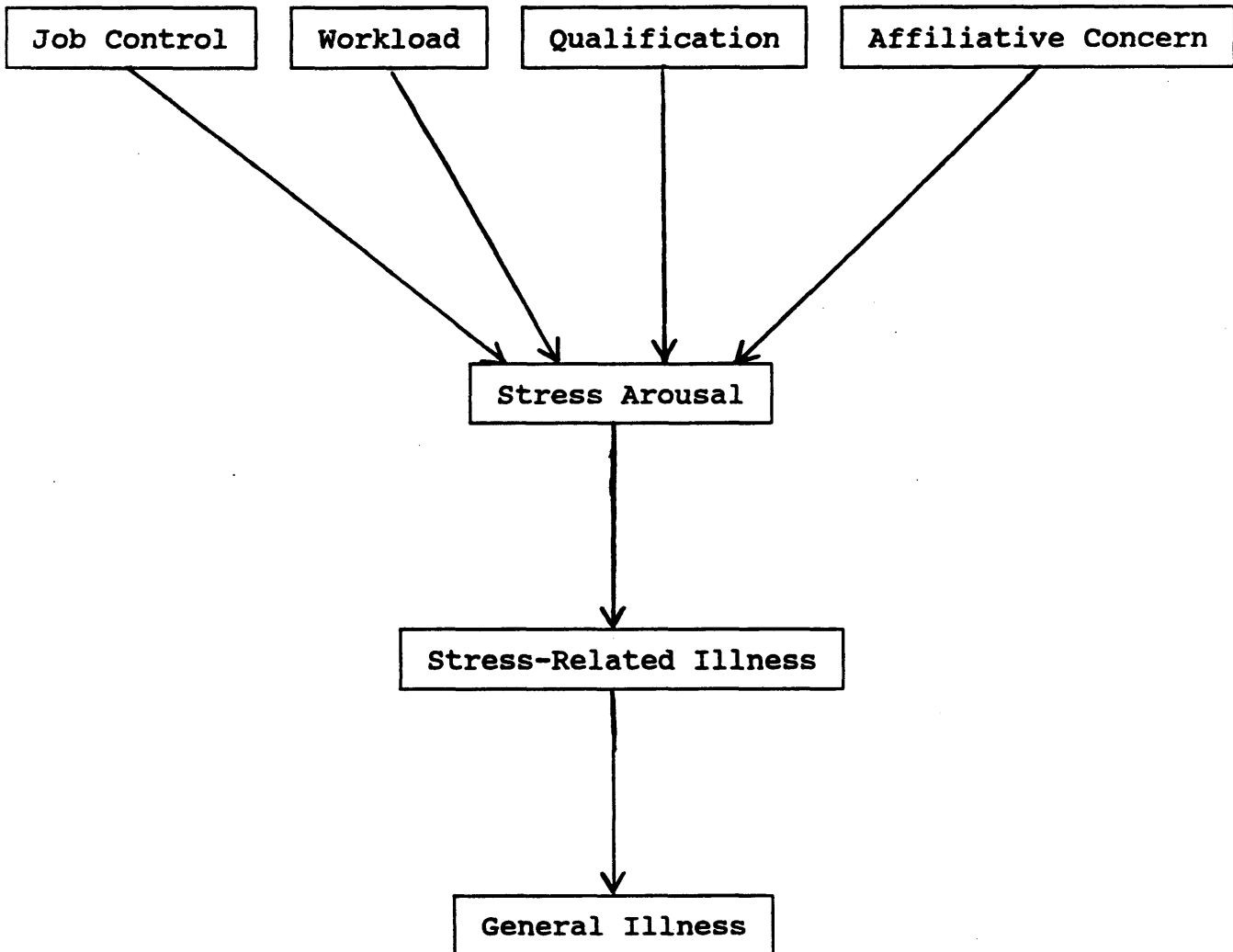
predictive of (i.e., theoretically caused) general illness. That may be interpreted as meaning the greater one's vulnerability to stress-related illness the greater one's susceptibility to a variety of illnesses.

Stress-related illness is best predicted (theoretically caused) by cognitive and affective arousal (i.e., stress arousal). Cognitive and affective arousal may be thought of as psychological or emotional discord, or psychological upheaval. This finding is very consistent with published literatures on the phenomenology and pathogenicity of stress.

If indeed our study has found, consistent with other investigations, that cognitive and affective arousal is the best predictor of stress-related illness and dysfunction, then the question arises: "What is the best predictor of stress arousal itself?" The answer to that question was pursued specifically by looking at job-related factors controlling for other lifestyle risk factors, i.e., factors known to be predictive of stress arousal. Therefore, the present investigation centered on which specific job factors seemed to cause stress arousal. The results indicate that the single most influential job factor associated with stress arousal was excessive workload. The notion that excessive workload can be a stress-producing agent has been well-documented in the organizational literature for decades (e.g., Friedman, Rosenman, and Carrol, 1958; Grayson, 1972; McLean, 1974; Antonovsky, 1979).

The second best predictor of stress arousal was found to be the loss of control over one's job. This particular aspect has also been well-documented in occupational and organizational literatures (e.g., Miller, 1980; Silver and Wortman, 1980; Wortman and Brehm, 1975) and reflects the old adage that any job description that entails responsibility without authority is likely to be stress producing to incumbents of that position. In fact, it was found

among AICPA respondents that situations which entailed significant work demands without having perceived appropriate control over the situation were particularly stress-producing.

The third best predictor of stress arousal was the job condition whereby the job role seemed to interfere with interpersonal relationships (either on or off the job) and family relationships.

Finally, the fourth predictor from a job perspective was being asked to perform a task without the perception of being appropriately qualified to perform that task.

Having examined the job factors that best predict stress arousal however, a few summarial comments pertaining to the overall model itself are in order. This model has been empirically generated and is to be assumed to be valid for the respondents to the degree to which the respondents are representative of the AICPA membership at large. The basic and most noteworthy finding is that job factors in and of themselves do not cause stress-related illness or illness of any other kind within the respondents. However, the effects of the aforementioned job factors seem to be mediated through their ability to cause cognitive and affective discord (i.e., stress arousal). It is that emotional discord which is then the causal agent in the phenomenology of stress-related illness and other subsequent illnesses.

A second aspect of the investigation was to examine the role of various demographic predictors on the overall stressor to illness model. The following highlights have been excerpted from the main body of the research and are as follows:

1) Females reported a consistently higher pattern of job stress, stress arousal, stress-related illness, and general illness than did their male counterparts;

2) Married individuals reported a consistently lower pattern of job stress, stress arousal, stress-related illness, and general illness than did their single/separated/or divorced counterparts;

3) Respondents over 45 reported a consistently lower pattern of job control (job stressor 1), workload (job stressor 2), stress arousal, and stress-related illness and dysfunction than did their younger counterparts;

4) Respondents from the Western U.S. reported a consistently higher pattern of workload (job stressor 2), affiliative concern (job stressor 4), stress arousal, stress-related illness and dysfunction, and general illness than did their counterparts from other geographic regions;

5) Self-employed individuals were significantly less concerned with job control (job stressor 1) and significantly more concerned over their qualification to effectively perform their job function (job stressor 4) than their counterparts from other accounting milieu. Public accounting respondents reported a significantly higher concern over excessive workload (job factor 2) than their counterparts from other accounting milieu. These job-related concerns were not associated with increased stress or illness among either group, however;

6) Partner/top managers were significantly less concerned about job control (job stressor 1) and significantly more concerned with relationships with colleagues (job stressor 4) than their counterparts at lower organizational ranks. This group also reported a significantly lower number of stress related illnesses than incumbents of other ranks;

7) There was an inverse relationship between organizational rank and concern over job control (job stressor 1);

8) Among respondents engaged in public accounting:

   a) auditors were significantly more concerned with job control (job stressor 1) than those performing other job functions (tax, management advisory services, etc.);

   b) members of local accounting firms were significantly less concerned with job control (job stressor 1) and workload pressures (job stressor 2) than employees of regional and national firms. On the other hand, national CPA firm employees reported a significantly greater concern over job control and workload than members of local and regional firms.

## Recommendations

Based on our findings, the following general stress reduction strategies are recommended for further consideration:

1) Appropriate matching of staff resources with permanent and seasonal personnel demands;

2) Realistic assessment of staff members' strengths and weaknesses by supervisory personnel; this, followed by appropriate job and project placement. The use of sophisticated psychological profiling techniques may prove of value in this effort used in accordance with accepted ethical standards;

3) The use of job analyses to ensure that staff members have sufficient control to meet realistic job expectations;

4) Efforts directed toward increasing organizational cohesion;

5) In-service stress management training for staff members;

6) In-service staff training for management personnel;

7) Establishment of external referral networks for employees using independent health-care providers with expertise in treating stress-related illness;

8) Organizational efforts in the area of health promotion.


We also suggest that the AICPA consider participating directly in the following stress reduction activities:

1) Promoting an educational series in the Journal of Accountancy to inform Institute members of the nature, causes, and methods of reducing stress;

2) Sponsoring continuing education seminars on a national basis designed to teach attendees the practical aspects of recognizing and managing stress among professional accountants;

3) Establishing a national board to study and make further recommendations on the topic of stress among accountants;

4) Setting up, in collaboration with Rollins Burdick Hunter Company, a national health promotion program for members which promotes and rewards health-enhancing lifestyles;

5) Encouraging members (through financial incentives) to participate in the completion of health risk appraisals.


The goals of each of the interventions recommended above are to (in a cost-beneficial manner) increase employee awareness through education, to alter lifestyles, and to ultimately reduce insurance carrier stress-related worker's compensation claims.

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# TECHNICAL REPORT

## 1.0 INTRODUCTION

In 1979, the Surgeon General of the United States issued his report to the nation entitled Healthy People. This report revealed that lifestyle was the single most important factor in the etiology of cardiovascular disease, cancer, and stroke which occur prior to age 75. Further, Healthy People indicted lifestyle as contributing between 45 to 51% of the pathogenic effect to the aggregated 10 leading causes of premature death in the U.S. One of the major factors which contributes to a pathogenic lifestyle is "stress" (Everly and Feldman, 1985).

"Stress" is the term chosen by endocrinologist Hans Selye to describe the neuroendocrine responses of the body to any demand placed on it. It is now clearly accepted that stress arousal can become acute enough to either cause or exacerbate physical illness. In fact, according to the National Council on Compensation Insurance, stress now accounts for approximately 14% of occupational-disease workers' compensation claims, up from under 5% in 1980 (McCarthy, 1988). The Council also notes that medical and benefits payments average $15,000 for stress-related claims, twice the average amount paid for workers with physical injuries.

The virulence of pathogenic stress arousal and its subsequent total dollar cost to business and society have been difficult to document. However, recent estimates place the overall cost to the economy from stress-related productivity losses and increased absenteeism and medical costs as high as high as $150 billion a year (Miller, et. al., 1988). Thus, whether it be because of an inherent interest in improving employee productivity through the reduction of behavioral risk factors for stress, or because of interest in reducing health/medical care costs associated with excessive stress, there

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is a continuing interest in the phenomenon of stress arousal. This interest
is often expressed in terms of occupation-specific interest as the following
section will examine.

## 2.0   HISTORICAL ANTECEDENTS IN THE ACCOUNTING PROFESSION

Historically, the accounting profession has concerned itself with the
phenonmenology and prevalence of stress, both job-related and personal, among
its members. Studies dating back to the late 1950's have addressed the issue
of stress as a problem confronting practitioners in all aspects of the
profession. Below are synopses of the most notable of these studies.

In a classic study, Friedman, Rosenman, and Carroll (1958) tested serum
cholesterol levels of tax accountants during the peak tax season (January
through April) and during the immediate months thereafter (May and June).
Blood sample analysis revealed significant increases in average serum
cholesterol to a peak of 323 mg./DL around April 15th, with a drop to normal
levels (a range of 200-220 mg./DL) by June. In addition, blood coagulation
times dropped from an average of 8.1 minutes in February, to 5 minutes after
the tax season peak in April. Both measurements indicated a high bodily
secretion of the stress hormone adrenalin during the tax season, a noted
physical symptom of excessive stress.

Sapp and Seiler (1980) reported the results from a survey of 1,338
management accountants employed by manufacturing concerns throughout the
United States. The purpose of the study was to test the following
hypotheses: 1) the level of accountants' stress associated with their roles
in the firm's organizational structure (i.e., contending with either
incompatible performance expectations or unclear job expectations) would be
negatively related to their measured level of job satisfaction; 2) role
stress would be positively related to the accountants' degree of involvement

in the performance evaluation process; and, 3) the accountants' degree of involvement in the performance evaluation process would be negatively related to job satisfaction. Job satisfaction was measured by the Job Description Index developed by Smith, Kendall, and Hulin (1969) which includes score calculations on the dimensions of pay, work content, supervision, co-workers, and promotion opportunities. Role stress was measured by using the technique of factor analysis on scales developed by Rizzo, House, and Lirtzman (1970). The survey produced mixed results. The first hypothesis was upheld, i.e., role stress was negatively related to job satisfaction. However, equivocal results were obtained from testing the second hypothesis in that significant correlations (with role stress) were only obtained for two stressor factors, and one of the two (ambiguity due to role expectations) was negatively correlated with role stress. Finally, a positive (not negative, as hypothesized) relationship between accountant involvement in the performance evaluation process and job satisfaction was revealed. In summary, the authors concluded that accountants received satisfaction from the control activity even though it often times was associated with higher interpersonal stress.

Senatra (1980) conducted a study of perceived role conflict and role ambiguity experienced by 88 audit seniors in 8 offices of one Big Eight public accounting firm. To serve as a framework for the study, Senatra developed a model which included potential sources of role conflict and role ambiguity, resultant role perceptions, and potential consequences of any perceived conflicts and/or ambiguities. The model's prescribed relationships were tested through two specific hypotheses: 1) role conflict and role ambiguity are related to three particular personal consequences in a defined direction (e.g., positively related to job-associated tension); and, 2) ten specific measures of organizational climate were related to role conflict and

role ambiguity in a defined direction (e.g., positively related to information suppression).

The above hypotheses were tested by asking respondents to answer 103 questionnaire items which were classified into 29 variable categories for analysis. These categories measured role conflict and role ambiguity, job-related tension, job satisfaction, professional autonomy, designated measures of organizational climate, and employee propensity to leave the firm. The results indicated a positive relationship between role conflict and job-related stress, and an inverse relationship between role ambiguity and job satisfaction. In light of these findings, the author prescribed that CPA firms initiate measures to reduce employee stress to tolerable levels.

Gaertner and Ruhe (1981) reported the results of adapting a stress measurement questionnaire developed by the Social Environment and Mental Health Program of the Institute of Social Research at the University of Michigan to measure stress among accountants. Specifically, the authors distributed the adapted instrument to employees of three large office (over 100 professionals) national CPA firms (n=81), three small office national CPA firms (n=54), and four local/regional CPA firms (n=58), all of whom were employed in the Midwest United States. One hundred ninety three usable responses were received (out of 398 instruments distributed) which answered questions designed to differentiate reported stress levels according to organizational type, job function, and organizational position. The results indicated that jobs in regional firms generated equal or less stress than did national firm jobs (irrespective of national firm size). In addition, no significant differences in reported stress were measured among job functions, i.e., among auditors, tax practitioners, management advisory service employees, etc. However, reported stress level differences were significant

when responses were classified according to organizational position: that is, partners reported less stress than other positions; junior staff accountants reported the highest stress levels; and, seniors and managers reported stress levels that fell between the other two groups. Interestingly, the authors hypothesized that the ascendancy of one to the rank of partner might have been due, in part, to one's ability to cope with stressful situations. In addition, stress reduction strategies, including aerobic exercise and relaxation response techniques, were recommended to combat stress and the results therefrom.

Strauser, Kelly, and Hise (1982) surveyed 138 management accountants drawn randomly from the membership directory of the American Institute of Certified Public Accountants in an attempt to correlate personal and job-related stressor variables with job stress. The results indicated that two variables, age and organizational rank, correlated significantly (in a positive direction) with job stress. The authors also identified role conflict, role clarity, and job dissatisfaction as factors associated with job stress.

Smith and Katzman (1984) reported the results from an in-person survey and subsequent mail follow-up of of 24 internal auditors in the Baltimore, Maryland, area. By administering the Everly Behavioral Survey (an earlier version of the instrument utilized in the present study) and the Personal Lifestyle Survey (Everly and Newman, 1982), the authors obtained stress level indices for the respondent group. The mean stress level measured for the auditors was then compared (through t-test analysis) to figures obtained (by independent administration of the above test instruments) for a group of civil service employees and a group of engineers. The results indicated that the mean stress level registered by the auditor group (89.08) was significantly higher than that measured for the civil service employees

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(81.68), but not significantly different from the engineers (90.99). However, the auditors registered the highest maladaptive coping behavior score (3.79) of the three groups. This indicated that the auditor group engaged in an average of nearly four maladaptive behaviors (e.g., smoking, drinking three or more cups of caffeinated beverages a day, etc.) on a regular basis. Based thereon, the authors concluded that, in the limited group of auditors studied, a relatively high pre-disposition to the physiological stress response existed, and auditor coping behavior was potentially exacerbating the problem.

In response to the surge in the number of female accounting practitioners over the past decade, (Pearson, Wescott, and Seiler (1985) conducted a comparative study of reported stress between female (n=17) and male (n=32) accountants working in a large practice office of a (name withheld) Big Eight firm. Respondents completed two survey instruments on both April 1 and August 15. The first instrument consisted of a fifteen-item questionnaire designed to measure general sources of work-related stress. The second instrument consisted of nine items specifically designed to measure likely stressors in public accounting settings (overtime pressures, time-budget pressures, etc.). Responses to the fifteen-item instrument were factor analyzed to yield three job-related stress dimensions: 1) interpersonal relations; 2) workload; and, 3) ambiguity and uncertainty. Scores for each dimension were measured and compared for both males and females at both of the above dates. The nine potential stressors on the second instrument were rated by males and females as to the amount of stress produced by each item. The mean score reported on each item by males was then compared to the corresponding mean score reported by females.

The results from the fifteen-item instrument indicated that female stress

levels were significantly lower than those reported by males on the ambiguity and interpersonal dimensions on April 1. However, these differences disappeared on August 15. The results from the nine-item instrument indicated that time/budget pressures and overlap of assignments were the highest sources of stress for both women and men. In addition, women rated overlap of assignments significantly higher and frequency and adequacy of personnel interviews, level of compensation, and travel requirements significantly lower than did men as work-related job stressors.

## 3.0 RATIONALE FOR THE PRESENT STUDY

The aforementioned studies provide considerable insight into either: 1) the nature and prevalence of specific job-related stressors reported in various accounting milieu; or, 2) actual reported levels of stress arousal among accountants. However, these studies have failed to address the interactions between job-related stress, stress arousal, and various health outcomes. It is only through the measurement of these relationships that a global model of stress and illness among accountants may be constructed. In turn, the global model may become the focal point for intervention strategies designed to reduce both job-related and personal stressors, thus reducing stress-related symptoms and illnesses as well as reducing employee stress-related costs to employers. The purpose of this study, therefore, is to examine the relationship between job-related stressors, stress arousal, and stress-related physical symptomology for the purpose of establishing a global stress paradigm for accountants.

Specifically, the Insurance Trust Committee of the American Institute of Certified Public Accountants has expressed concern regarding the increase, both in number and dollar magnitude, in stress-related worker's compensation claims that the AICPA Insurance Trust Foundation has incurred among the

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insured AICPA membership in recent years.  The present study was commissioned to provide scientifically valid evidence regarding the presence, nature, and interrelationship between personal and job-related stressors among the AICPA membership at large.

## 4.0  METHODOLOGY

The authors, working closely with members of the Insurance Trust Committee, planned a study of the potential sources of stress and related physical outcomes among AICPA members.  This study was designed to address the following questions:

1) Are job factors associated with stress?

2) Are job factors associated with stress, even when controlling for exogenous lifestyle behavior?

3) Is stress associated with arousal related dysfunction?

4) Is stress associated with illness?

5) Are any specific AICPA subpopulations more stressed than others?

A total of 4,000 individuals were randomly selected from among the approximately 266,000 members of the AICPA to participate in the study.  The target sample was stratified to include a representative number of members from public accounting, commerce or industry, education, and government. Members in the target sample were sent an introductory letter by the chairman of the Insurance Trust Committee informing them of: 1) their selection to participate in an upcoming AICPA sponsored research project; and, 2) the desire of the Insurance Trust Committee for their participation. Approximately one week later each individual was sent a packet consisting of a cover letter, a demographic data sheet, a research instrument, a return postage guaranteed envelope, and a return postage guaranteed postcard.  The cover letter instructed respondents to return the postcard (possessing a

control number) under separate cover so as to identify respondents while maintaining the anonymity of their responses. Three weeks later, individuals from whom return postcards had not been received were sent a follow-up letter again requesting their participation in the study. Responses received within eight weeks of the mailing of the research instrument were included in the study. By that time 1,618 usable responses were received resulting in a usable response rate of 40.45 percent. Table 1 presents a demographic profile of respondents by gender and geographic location.

## Table 1

## DEMOGRAPHIC PROFILE OF RESPONDENTS BY GENDER AND

## GEOGRAPHIC LOCATION (N=1,618)

| Gender | | N |
|---|---|---|
| Females | | 340 |
| Males | | 1,273 |
| | Total | 1,613* |

Geographic Region

| South | Florida, Georgia, Alabama, Mississippi, Louisiana, South Carolina, Arkansas, North Carolina, Tennessee, Kentucky, Virginia, West Virginia | 343 |
|---|---|---|
| Mid-Atlantic | Maryland, Delaware, Washington D.C., Pennsylvania, New Jersey, New York | 294 |
| Northeast | Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine | 74 |
| Midwest | Ohio, Michigan, Indiana, Illinois, Missouri, Wisconsin, Iowa, North Dakota, South Dakota, Kansas, Nebraska, Minnesota | 372 |
| Southwest | Texas, Oklahoma, New Mexico, Arizona | 192 |
| West | Alaska, Hawaii, California, Oregon, Washington, Montana, Idaho, Utah, Wyoming, Colorado, Nevada | 278 |
| | Total | 1,553** |

* Five respondents failed to indicate gender

**Sixty-five respondents failed to indicate geographic region

## 4.1  THE SYSTEMS MODEL OF STRESS

Data on stress arousal, aspects of work, and health outcomes were assessed via a questionnaire. The battery of instruments utilized in the present study were based on the model of human stress depicted in Figure II (Everly, [1989]).

In this study **stress** is defined as a fairly predictable arousal of the psychophysiological (mind-body) systems, which, if prolonged, can fatigue or damage the system to the point of malfunction and disease (Girdano and Everly, 1986). Thus, stress is an **arousal** reaction to a stimulus, either a person, event, or object. **Stressor** is the term that describes the stimulus that causes the arousal reaction. Figure II identifies stressors from job factors and lifestyle. Lifestyle, which is characterized by behaviors both adaptive and maladaptive, is considered both a source of and reaction to stress arousal. Stress-related (illness) symptoms and dysfunction represent perceived physiological manifestations of stress. Health outcomes represent illness and disease which can be related to prolonged periods of excessive stress.

# Figure II

## Sources and Outcomes of Stress Arousal

| Job | | Lifestyle |
| --- | --- | --- |

**Stressor Events**

**Cognitive/Affective Arousal**

**Stress-Related Symptoms and Dysfunction**

**Illness**
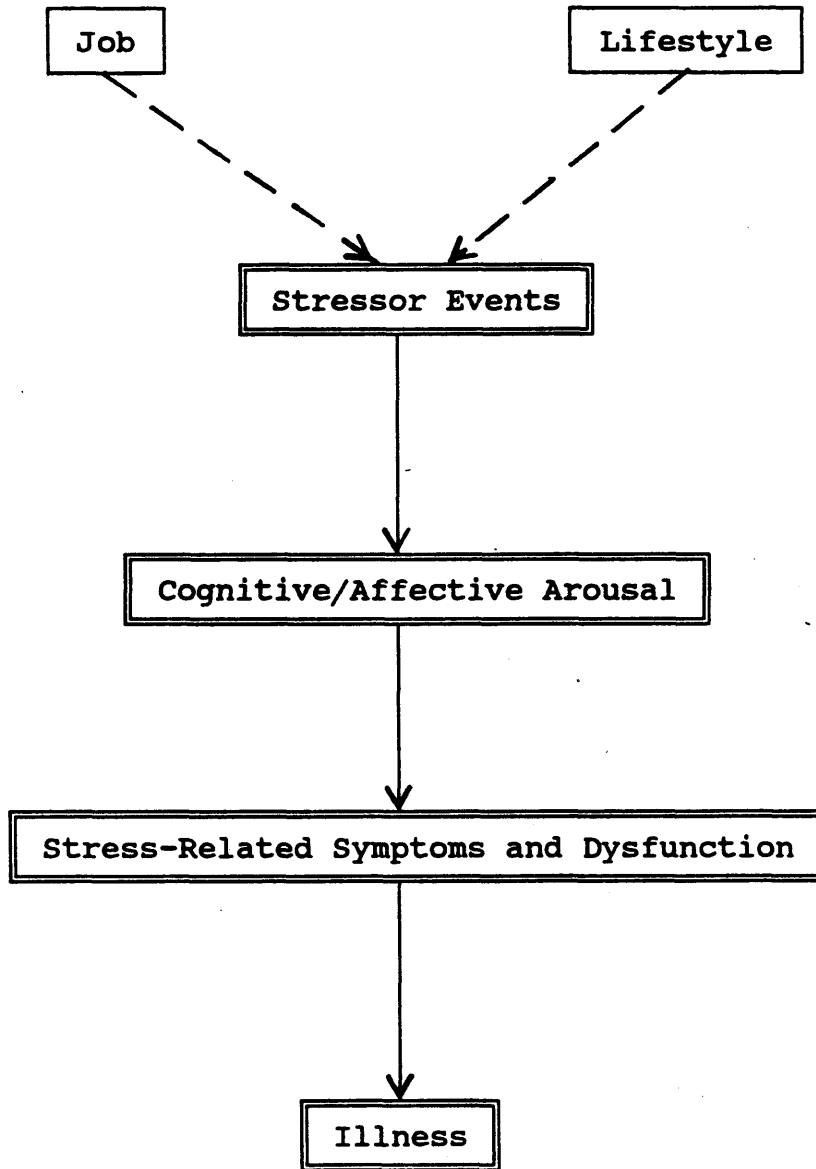
## 4.2 JOB-RELATED STRESS

Job-related stress was assessed via the Job-Related Tension Index (JTI), developed by Kahn, Wolfe, Quinn, and Snoek (1964), a fifteen-item, five-option scale which has been utilized extensively to assess organizational stress (Snoek, 1966; Burke, 1976; Mackinnon & Summers, 1976; MacKinnon, 1978; Ivancevich, 1980; Pearson, Wescott, and Seiler, 1985). Specifically, the JTI is designed to measure some of the numerous sources of role strain that might be associated with an individual's job. On the JTI respondents are asked to indicate the frequency with which they are bothered by each of fifteen items (see Appendix A). An overall index of organizational stress can be obtained by simply summing the reported scores on each of the individual items.

In order to develop more meaningful indices of job-related stress, a factor analysis of the fifteen items was completed. This process combined JTI items addressing similar job stressors into meaningful work factors. These work factors retained the intended meaning inherent in the individual JTI items, but ensured that response reliability was optimized. More importantly, the factor analysis added clarity to the fifteen JTI questions by identifying complex linkages among the items. The common factors could then be related to reported stress arousal and stress-related symptoms and illnesses.

## 4.3  LIFESTYLE BEHAVIORS

Lifestyle behaviors were measured in order to assess how these factors might contribute to stress and illness, independent of job factors. These assessments were made in order to partial out their effects and thus avoid any contamination of the investigation into the relationship between job factors and stress and illness.

Lifestyle behavior can be dichotomized as either "adaptive" or "maladaptive" to further clarify the concept. Adaptive behavior is defined as any behavior which can be used to manage demands and reduce stress/anxiety while simultaneously fostering/promoting personal health. Examples include relaxation techniques, exercise, etc. Maladaptive behavior represents any coping behavior which can be used to manage demands and reduce acute stress/anxiety but which is simultaneously self-debilitating in that such behavior will create other demands and prolonged stress/anxiety. Examples might include smoking, eating to cope with stress, drug abuse, etc. It is important to note that both adaptive and maladaptive behaviors are usually effective in reducing acute demands and stress and anxiety. Yet maladaptive behaviors will tend to generate long-term demands and stress/anxiety on their own, whereas adaptive coping behaviors tend to foster health and reduce demands and stress/anxiety in the long run. It is insufficient to limit measurement to adaptive or maladaptive behavior, however. Data exist which strongly infer consideration of adaptive behavior vis-a-vis maladaptive behavior as the ultimate determinant of health status. Research by Bradburn (1969), Lowenthal and Chiriboga (1973), and Gersten et. al. (1975) present data supporting consideration of the "balance" between health-enhancing and health debilitating behaviors.

This study assessed lifestyle via the Personal Lifestyle Survey (Everly and Newman, 1982). This instrument is designed to measure adaptive and

maladaptive behaviors (see Appendix B). It contains 20 questions: 10 related to adaptive behaviors, and 10 related to maladaptive behaviors. The questions ask respondents whether they engage in specific behaviors in their daily lives. Respondents generate three scores. The $\underline{A}$ score indicates the number of adaptive behaviors reported by summing the number of yes responses on the odd-numbered questions. Yes responses to the even numbered questions yields an $\underline{M}$ score which reflects the maladaptive behaviors reported. The third score is termed the $\underline{D}$ score and represents the residual score after subtracting the $\underline{M}$ score from the $\underline{A}$ score. The $\underline{D}$ score provides an indication of the overall health-enhancing behavior reported by individual respondents.

The validity and reliability of Personal Lifestyle Survey as a measure of adaptive and maladaptive behaviors has been demonstrated by Everly and Newman (1982). This scale can also be completed in four minutes or less and hand scored in less than a minute.

## 4.4 STRESS AROUSAL

The assessment of stress arousal was undertaken with a psychometric self report instrument, the Everly Stress and Symptom Inventory (ESSI). This instrument was developed to avoid the various complications and sources of invalidity inherent in direct physiological measurement.

The ESSI (Everly, Sherman, and Smith, in press) is a two-part self-report paper and pencil survey designed to assess an individual's: 1) stress arousal; and, 2) autonomic and stress-related symptoms.

### 4.4.1 The Stress Arousal Scale

The Stress Arousal Scale (SAS) of the ESSI is a twenty-item self-report scale designed to tap the respondent's cognitive-affective domain, i.e., the precipitators of the physiological stress response, thereby allowing an indirect assessment of current levels of stress arousal (see Appendix C). The SAS is predicated on the theory that an individual's emotional arousal is based upon his/her assignment of meanings to environmental stressors. Emotional arousal, in turn, is considered a precursor to actual physical stress. While it cannot be proven that various conditions indicating emotional arousal (as measured on the SAS) cause actual physical stress, it is generally accepted that these conditions are highly correlated with stress arousal (Lazarus and Folkman, 1984; Everly and Sobelman, 1987).

On the SAS respondents are questioned as to how often they have recently ("within the last few weeks") experienced each of the twenty cognitive-affective conditions. The higher the score, the higher the inferred stress arousal. Therefore, in order to generate a numeric value on this dimension, the circled responses to these items are simply summed. There are four exceptions to this rule: items 1, 5, 11, and 14 are "reversed scored" items. This simply means that for these items only, a circled response of 1 = 4

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points, 2 = 3 points, a response of 3 = 2 points, and 4 = 1 point. To review, on the SAS there are twenty items; sixteen of these items are "straight scored" (i.e., a circled response of 1 = 1 point, 2 = 2 points, etc.), the other four items are "reverse scored" as described above. Scores for each of the twenty items are summed in order to generate an overall stress arousal score.

The SAS contains several safeguards aimed at avoiding some of the potential pitfalls of self-report scales. As described above, four items are "reversed" to compensate for response patterning. In addition, an earlier version of the SAS was correlated with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) to assess the potential of the former to be influenced by respondents' social desirability needs, thus invalidating the scale's responses. The correlation for thirty-six respondents was -.21 (p<.10). The nonsignificance of this relationship suggests a low vulnerability to the influence of social desirability. Finally, the SAS was field tested on over one hundred professional educators. A consensus indicated that the items could be understood and responded to by individuals possessing a ninth grade education.

The SAS has previously shown its metric reliability. Reliability is defined as the tendency of a psychometric instrument to yield consistent responses. The test-retest reliability of the SAS was .88 and .95 over a one-week interval in independent studies of forty-two and twenty-two asymptomatic individuals, respectively (Everly et. al., 1984). The SAS takes three to four minutes to complete and can be hand-scored in one minute or less.

### 4.4.2  The Autonomic Conditions Scale

Item #21 on the ESSI is a list of thirty-eight stress-related physical

symptoms. An overall score is generated by simply adding all of the numeric responses together. While such a score is possible, the purpose of item #21 is to aid in symptom identification rather than infer symptom intensity. Generally speaking, items endorsed with a 3 or a 4 may be clinically meaningful.

Prior research (Everly, Sherman, and Smith, in press) demonstrated the test-retest reliability of item #21 by obtaining a correlation coefficient of .885 between initial respondent scores, and scores obtained from the same individuals one week later. Item #21 can be completed in 2-3 minutes and scored in a minute or less.

## 4.5  HEALTH STATUS

Health status was assessed via the Seriousness of Illness Rating Scale (SIRS).  The SIRS, initially developed by Wyler, Masuda, and Holmes (1968) is a widely used tool in health psychology research for the purpose of assessing the relationship between "social stress and seriousness of illness" (p.363).  On the SIRS respondents are asked to circle the appropriate number that describes the period within which he/she was told they had each listed condition (see Appendix D).  Each respondent generates two scores: one score represents the sum of the weighted mean values of each of the conditions experienced "within the past year"; the other score represents the sum of the weighted mean values of each of the conditions experienced "within the past 5 years."  The weighted mean values for each condition are listed in Appendix E.  These values indicate the relative seriousness of each condition as indicated by Wyler et al. (pp. 366-368).

# 5.0   DATA ANALYSES AND RESULTS

## 5.1   General Population

### 5.1.1   Tests for Non-Response Bias

Although the response rate was relatively high, the intended data analyses were preceded by tests for non-response bias using the early-late hypothesis (Oppenheim, 1966).  Separate t-tests were conducted to assess the significance of mean score differences between the the first 100 respondents and the final 100 respondents on each of the scales administered.  The results (presented in Table 2) coupled with the high response rate provide reasonable assurance that there was no significant non-response bias associated with the study.

Table 2

## Early-Late Comparison of Respondent Scores

## First 100 Versus Last 100 Respondents

| | First 100 (Week 1) | | Last 100 (Weeks 6-9) | | | |
|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | t Value | PR>t * |
| Job Tension Index (JTI) | 34.64 | 7.96 | 34.85 | 8.23 | 1.84 | .85 |
| Stress Arousal Scale (SAS) | 39.39 | 9.89 | 37.96 | 8.74 | 1.08 | .28 |
| Autonomic Conditions Checklist (ACC) | 16.57 | 14.41 | 16.75 | 12.86 | .09 | .93 |
| Seriousness of Illness -1 Year (SIR1) | 976.63 | 746.92 | 956.79 | 654.13 | .20 | .84 |
| Seriousness of Illness -5 Year (SIR5) (see Note 1) | 400.20 | 435.53 | 568.02 | 648.03 | 1.46 | .15 |
| Lifestyle D Score | 2.63 | 2.75 | 2.49 | 2.81 | .36 | .72 |

* Probability of obtaining the associated t Value or one larger if the population means are equal

Note 1: Due to a heterogeneity of variance problem between scores of early and late respondents, the SIR5 scores were ranked. The t and PR>t values relect the ranked SIR5 scores.

## 5.1.2 Factor Analysis

The first step in fundamental data analysis is normally the generation of descriptive statistics. In the present study this step was preceded by a preliminary data reduction process involving the 15 items of the Job Tension Index (JTI). The 15 items of the JTI were submitted to a principal components factor solution. Orthogonals were inserted on the diagonals for the subsequent orthogonally rotated factor pattern to emerge. Eigenvalues were selected at the .5 level. The factor solution was rotated for 283 iterations reaching a convergence threshold of .001.

The purpose of conducting such a factor analysis is to take the original item list (in this case 15 items) and reduce it to some smaller number of homogeneous item groups, i.e., factors. These items are combined by their statistical propensity to covary. The resultant factors are defined by their constituent factor items and are now more meaningful as a clustered group than they were as individual items. The resultant factors may then be interpreted as the smallest number of underlying job stressors identified by the responding AICPA members. The factor pattern solution for the JTI is presented in Table 3 and may be viewed as the core job stressors residing within the JTI.

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It can be seen that the resultant factor solution yielded 4 statistically independent factors (job stressors). These stressors are defined by virtue of their constituent items and are defined below.

Job stressor (factor) I was named "Job Control" and consists of items 1,2,3,5,7,8,11,12, and 14. This factor reflects the notion that a perceived lack of control over one's job may be a significant source of stress arousal. To better understand this factor, one should realize that control is best defined as the ability to:

1) <u>effect change</u> within one's job role (power and authority);

2) <u>predict</u> changes in one's job function and predict the emergence of potential threats to effective functioning; and/or;

3) <u>understand</u> expectations and parameters of responsibility within one's job (Everly, 1989).

Job stressor (factor) II was named "Workload." This factor consists of items 4,13, and 15 and reflects the well-known social psychological concept of "overload" as a stressor. Overload is defined as the point at which occupational demands exceed one's ability to effectively respond in an effective and healthful manner without infringing upon other aspects of one's life (Girdano and Everly, 1986; Everly and Feldman, 1985).

Job stressor (factor) III was named "Qualification." It consists of item 6 and reflects the perception of being underqualified to perform one's job.

Job stressor (factor) IV was named "Affiliative Concern." It consists of items 9 and 10 and reflects the respondent's perception that the interpersonal aspects of the job may be important components of virtually any job function. More specifically, it may be suggested that any job function which yields interpersonal discord has the potential to be an occupational stressor.

Having identified the four core job stressors for the AICPA respondents, the next step was to assess the measured frequency of those stressors. This was accomplished by generating the descriptive means and standard deviations for each of the job stressors (factors) which are presented in Table 4.

Table 4

**Means and Standard Deviations for Frequency of Job Stressors**

| | $\overline{x}$ | s.d. | F Value | P>F * |
|---|---|---|---|---|
| Workload (Factor II) | 2.82 | .82 | | |
| | | | > 323.29 | .001 |
| Affiliative Concern (Factor IV) | 2.33 | .73 | | |
| | | | > 32.45 | .001 |
| Control (Factor I) | 2.17 | .65 | | |
| | | | > 44.61 | .001 |
| Qualifications (Factor III) | 1.99 | .87 | | |

*
Probability of obtaining the associated F Value or one larger if the population means are equal

Table 4 yields insight into the frequency of the four identified job stressors for AICPA respondents. The results indicate that Workload, when it is perceived as being excessive as defined, is the most stressful aspect of the the job. The point at which the job interferes with interpersonal, social, and family relationships is perceived as the next most stressful aspect of the job. The lack of control and feeling underqualified, respectively, follow in terms of reported frequency.

### 5.1.3 Descriptive Statistics

After reducing the JTI data and generating descriptive statistics thereon, descriptive statistics were generated on the remaining variables of interest. These appear in Table 5.

## Table 5

### Descriptive Statistics for Stress Arousal, Stress-Related Dysfunction, and Illness

|  | $\bar{x}$ | s.d. |
|---|---|---|
| Stress Arousal (SAS) | 38.62 | 8.92 |
| Stress-Related Dysfunction (ACC) | 14.94 | 11.97 |
| Illness 1-Year (SIR1) | 897.82 | 728.23 |
| Illness 5-Year (SIR5) | 452.86 | 524.20 |

Having aggregated the relevant data and reduced them to meaningful descriptive statistics, the next step in the analysis was to utilize the generated data to test the constructed causal model to gain insight into the inter-relationship among the relevant variables.

### 5.1.4 Causal Path Analysis

The first step in causal modeling is to generate a theoretical/rhetorical model which explains the inter-relationships between job stressors, stress arousal, and disease. Figure I illustrated the model utilized in the present study.

The second step in causal modeling is to conduct linear correlation analyses in order to add an empirical foundation to the model. This process generated Pearson's correlation coefficients between the dependent variables (stress arousal, stress-related dysfunction, illness 1-year, illness 5-year) and the independent variables (job factors I-IV). This procedure identified the independent variables which were meaningfully related to the dependent variables of interest (i.e., those having a significant statistical

relationship at p<.05). The results of this linear modeling process are presented in Table 6.

Table 6

**Pearson Correlation Matrix For General Sample (n=1,509)**

| | Cognitive/Affective Indices of Stress Arousal (SAS) | Symptoms of Stress-Related Dysfunction (ACC) | Illness 1-Year (SIR1) | Illness 5-Year (SIR5) |
|---|---|---|---|---|
| Factor I | .341* | .262* | .139* | .064** |
| Factor II | .442* | .287* | .137* | .063** |
| Factor III | .279* | .218* | .118* | .028 |
| Factor IV | .304* | .228* | .141* | .036 |

* Statistically significant at the .01 error level

** Statistically significant at the .05 error level

Table 7 presents the results from conducting correlational analyses utilizing the same linear model except that partial correlation coefficients are presented. In this case the effect of non job-related lifestyle behaviors has been removed, thus isolating the effects of job stressors on the linear model.

Table 7

**Partial Correlations for Path Analysis**
(Lifestyle Held Constant)

| Job Stressors | Cognitive/Affective Indices of Stress Arousal (SAS) | Symptoms of Stress-Related Dysfunction (ACC) | Illness 1 Year (SIR1) | Illness 5 Year (SIR5) |
|---|---|---|---|---|
| | $->.61*->$ | $->.49*->$ | $->.16*->$ | |
| Factor I ------> | .30* | .22* | .10* | .05 |
| Factor II ------> | .37* | .21* | .08** | .04 |
| Factor III ------> | .23* | .18* | .08** | .02 |
| Factor IV ------> | .27* | .19* | .11* | .03 |

.29*

.16*

.19*

\* Statistically significant at the .01 error level

\*\* Statistically significant at the .05 error level

Using the correlational data in Table 7, a path model was constructed to depict the stressor to illness process. Further analysis was needed, however, due to the fact that the linear correlations failed to discriminate between direct and indirect relationships among the variables. In order to discriminate between direct (theoretically causal) effects from effects mediated through other variables, multiple regression analysis was employed on those variables found to be significant on the basis of the linear model constructed in Table 7. The results are presented in Table 8.

---

## Table 8

### Standardized Regression Coefficients for Predictors of
### General Illness at One Year

| Predictor Variables | Beta Coefficients Illness at One Year (SIR 1) |
|---|---|
| Job Stressor I | .007 |
| Job Stressor II | .031 |
| Job Stressor III | .001 |
| Job Stressor IV | .025 |
| Cognitive/Affective Arousal | .014 |
| Symptoms of Stress-Related Dysfunction | .506[1] |

Multiple R = .496    $R^2$ = .246

[1] t=17.80, p<.001

---

The results of the present regression analysis indicate that the best predictor of general illness at the one year interval was the measure of stress-related dysfunction and autonomic nervous system arousal. (Note: An

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analysis of illness at the five-year interval was omitted due to its failure
to emerge as a result of any significant linear path.)  From the outset,
however, the major variable of interest in this investigation has been
stress-related illness (i.e., stress-related dysfunction and autonomic
nervous system arousal).  To assess the predictors of this important
phenomenon, another regression analysis was performed, the results of which
are presented in Table 9.

---

## Table 9

### Standardized Regression Coefficients for Predictors of
### Stress-Related Dysfunction and Autonomic Arousal

| Predictor Variables | Beta Coefficients Stress-Related Dysfunction and Autonomic Arousal |
|---|---|
| Job Stressor I | .037 |
| Job Stressor II | .030 |
| Job Stressor III | .033 |
| Job Stressor IV | .019 |
| Cognitive/Affective Arousal | .599[1] |

Multiple R = .615    $R^2$ = .378

[1] t=26.07, p<.001

---

The data in Table 9 indicate that the only significant predictor of
stress-related illness was cognitive and affective discord, known to be
predictive of psychophysiological arousal.

The final step in the development of the path model was to regress the job
stressors (factors) as predictors of cognitive/affective arousal.  The

results of this analysis are presented in Table 10.

Table 10

## Standardized Regression Coefficients for Predictors of

## Cognitive/Affective Arousal

| Predictor Variables | Beta Coefficients Cognitive/Affective Arousal |
|---|---|
| Job Stressor I | .183 [1] |
| Job Stressor II | .271 [2] |
| Job Stressor III | .096 [3] |
| Job Stressor IV | .136 [4] |

Multiple R = .465   $R^2$ = .216

[1] t=7.54, p<.001

[2] t=11.13, p<.001

[3] t=3.97, p<.001

[4] t=5.60, p<.001

Table 10 indicates that all job stressors are significant predictors of cognitive/affective arousal. Stressor II was the most important predictor of stress arousal, followed by stressors I, IV, and III, respectively. The latter three stressors played statistically significant, albeit subordinate predictive roles.

## 5.1.5 Summary - General Population

The major thrust of this investigation was to attempt to clarify the relationship that job stressors might play in the stress arousal process, and the role subsequent stress arousal might play in subsequent illness.

As for which job factors appear to be pathogenic, we find that excessive workload appears to have the greatest pathogenic effect for responding AICPA members. The lack of control over one's job appears to be the second most pathogenic job factor. This is consistent with previous literature (Weick, 1983) and the age old adage in management theory which states that situations should be avoided where one has responsibility without commensurate authority. Affiliative concern and perceived lack of qualification to effectively perform one's job function represent the third and fourth job factors in terms of pathogenic propensities.

Stress arousal was assessed via a measure of cognitive/affective arousal indicative of stress arousal itself. As a dependent variable, illness was sub-divided into stress-related dysfunction and autonomic arousal and general illness.

The results of the investigation for the general population of respondents are pictorially summarized in Figure III.

# Figure III

## Antecedents and Consequences of Stress

| Job Control F1 | Workload F2 | Qualification F3 | Affiliative Concern F4 |

*
B=.183

*
B=.271

*
B=.096

*
B=.136

Stress Arousal

*
B=.599

Stress-Related Dysfunction and Autonomic Arousal

*
B=.506

General Illness   (1 Year)
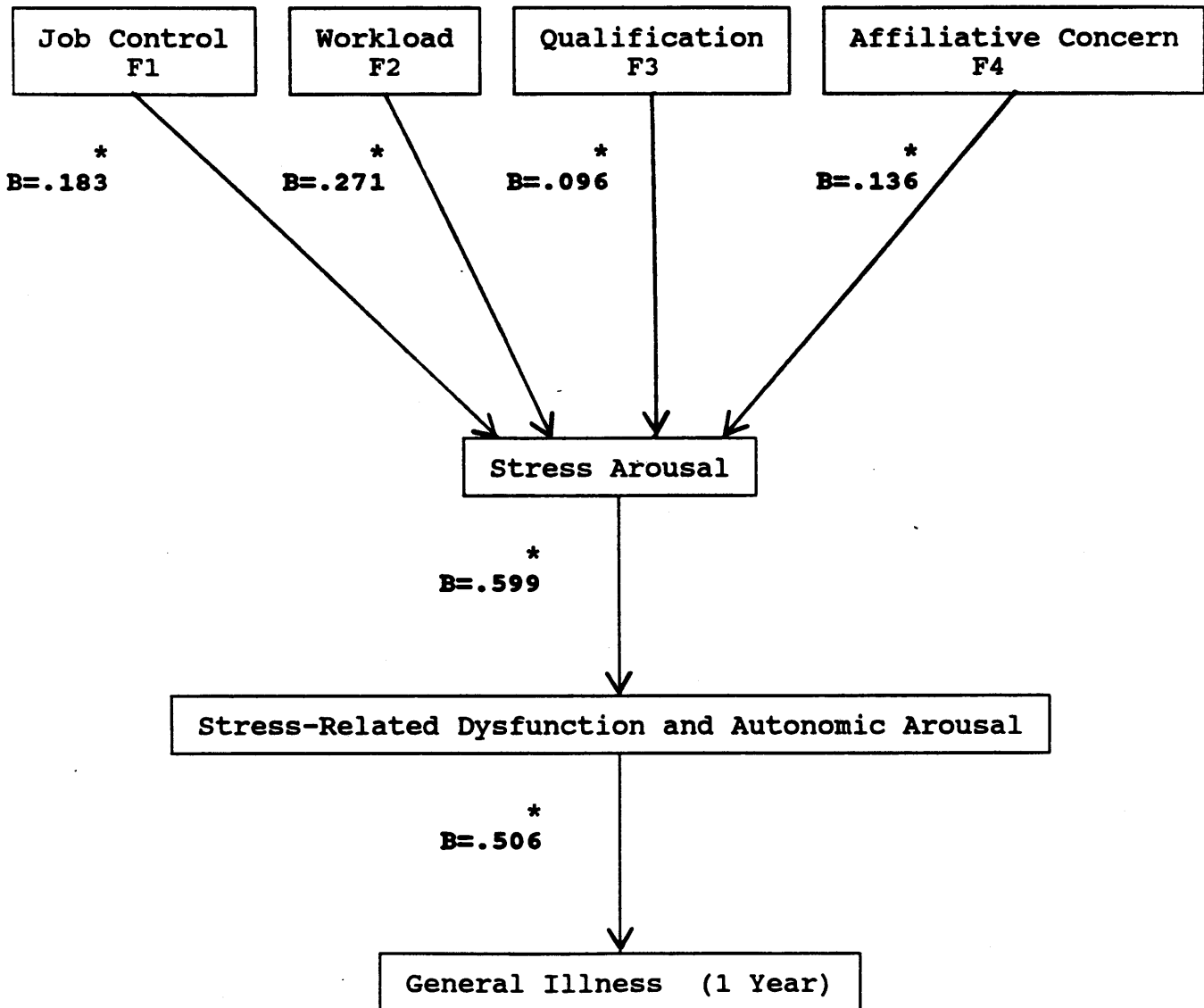
p<.001

The data in Figure III indicate that general illness is indeed predicted by stress-related illness, but in doing so explains only about 25% of the variation. Thus, general illness is a multifactorial phenomenon.

As for the prediction of stress-related illness, cognitive-affective arousal was the only direct predictor, explaining about 38% of the variation. It is important to note that job stressors did not predict stress-related illness. This means that job stressors are mediated through cognitive-affective arousal. Thus the pathogenicity of job-related stressors is a function of their ability to cause cognitive/emotional discord. This relationship is portrayed in the final empirically derived path model presented in Figure IV.

Figure IV

**FINAL PATH ANALYSIS MODEL**

**(GENERAL SAMPLE, N=1,509)**
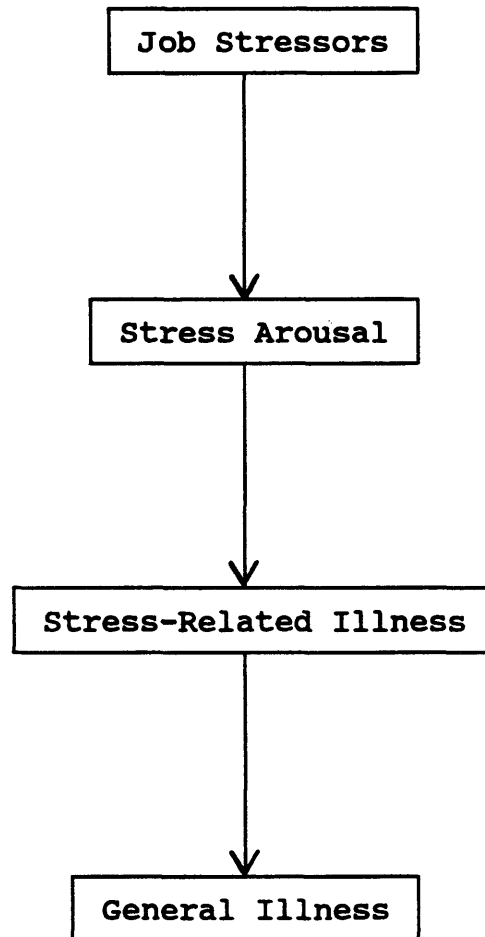
## 5.2 Results for Designated Subpopulations

The following sections present results of analyses designed to assess whether any specific AICPA subpopulations more stressed than others. Of critical interest in these comparisons was the reporting of any differential (both high and low) and consistent patterns of job related stress, stress arousal, and illness by specific groups in any of the targeted subpopulations.

### 5.2.1 Results By Gender

Table 11 presents a comparison of reported mean scores between male and female respondents on each of the administered scales. As indicated, females reported significantly higher scores on job control, stress arousal, stress-related dysfunction and autonomic arousal, and illness within one year than did their male counterparts. The pattern of higher levels of self-reported stress and illness by females is consistent with the causal model developed for the overall respondent population, and in conformity with prior research (Prodromidis, 1986; Everly, Sherman, and Smith, in press).

Table 11

Comparison of Respondent Scores By Gender

| | Males (n=1,273) | | Females (n=340) | | t Value |
|---|---|---|---|---|---|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| Job Factor 1 - Control/Ambiguity (F1) | 2.14 | .65 | 2.31 | .64 | 4.15*** |
| Job Factor 2 - Workload (F2) | 2.81 | .82 | 2.86 | .82 | 1.08 |
| Job Factor 3 - Qualification (F3) | 1.97 | .87 | 2.07 | .87 | 1.89 |
| Job Factor 4 - Affiliative Concern (F4) | 2.34 | .73 | 2.29 | .70 | 1.21 |
| Stress Arousal Scale (SAS) | 38.26 | 8.83 | 40.03 | 9.12 | 3.22*** [1] |
| Autonomic Conditions Checklist (ACC) | 13.80 | 11.40 | 19.15 | 12.97 | 7.75*** [1] |
| Seriousness of Illness-1 Year (SIR1) | 850.57 | 708.54 | 1,076.11 | 773.65 | 5.85*** |

***
significant @.001 error level

[1]
t value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 5.2.2 Results By Marital Status

A comparison of reported mean scale scores between married and single/separated/divorced respondents is presented in Table 12. Married individuals reported significantly lower scores on job control, stress arousal, stress-related dysfunction and autonomic arousal, and illness within one year than did their unmarried counterparts. Again, the pattern of reported job stress, stress arousal, and illness is consistent with the causal model developed herein. In addition, these results are in conformity with published statistics which document the increased longevity of married individuals (Carter and Glick, 1970).

## Table 12

### Comparison of Respondent Scores By Marital Status

**Marital Status**

|      | Single/Separated/ Divorced (n=308) | | Married (n=1,307) | | |
|------|------|------|------|------|------|
|      | x̄ | s.d. | x̄ | s.d. | t Value |
| F1   | 2.34 | .64 | 2.13 | .65 | 4.87*** |
| F2   | 2.85 | .85 | 2.81 | .81 | .49 |
| F3   | 2.02 | .88 | 1.98 | .87 | .76 |
| F4   | 2.34 | .75 | 2.33 | .72 | .16 |
| SAS  | 40.30 | 9.62 | 38.24 | 8.70 | 3.39***[1] |
| ACC  | 18.28 | 13.51 | 14.18 | 11.44 | 5.13***[1] |
| SIR1 | 1019.75 | 842.16 | 870.50 | 695.99 | 2.78**[1] |

**

significant @.01 error level

***

significant @.001 error level

[1]

t Value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 5.2.3 Results By Age Group

Table 13 presents a comparison of respondent scores categorized by age group. The significant differences in reported mean scores among age groups were further assessed via the statistical technique of contrast analysis. This analysis revealed that respondents over age 45 reported significantly lower job control (job factor I), workload (job factor II), stress arousal, and stress-related dysfunction and autonomic arousal scores than did their younger counterparts. Again, this pattern is basically consistent with the model of stress and illness derived from the general population of respondents. In addition, it supports prior research which reveals lower reported stress and stress-related illness and stress-related dysfunction and autonomic arousal among older respondents (Smith and Stewart, 1988).

Interestingly, however, contrast analysis revealed that respondents in the 31-45 age group were bothered significantly less by affiliative concerns (job factor IV) than their counterparts in the other age groups. Perhaps these concerns are supplanted by upward mobility aspirations among respondents in this group.

## Table 13

### Comparison of Respondent Scores By Age Group

#### Age Group

| | 30 and Under (n=339) | | 31-45 (n=904) | | Over 45 (n=357) | | F Value |
|------|-------|------|-------|------|-------|------|------------|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | [1] |
| F1 | 2.39 | .54 | 2.21 | .65 | 1.85 | .66 | 76.45*** |
| F2 | 2.82 | .78 | 2.90 | .81 | 2.61 | .85 | 15.88*** |
| F3 | 1.97 | .87 | 2.01 | .86 | 1.95 | .90 | .73 |
| F4 | 2.22 | .69 | 2.38 | .73 | 2.30 | .73 | 7.03*** |
| SAS | 38.46 | 8.73 | 39.34 | 9.01 | 37.00 | 8.60 | 8.75*** |
| ACC | 16.12 | 12.39 | 15.12 | 12.00 | 13.49 | 11.42 | 4.37* |
| SIR1 | 891.24 | 624.58 | 908.14 | 732.39 | 884.88 | 807.55 | 2.11 [1] |

*
  significant @.05 error level

***
   significant @.001 error level

[1]
  F Value calculated on the basis of ranked scores due to a
heterogeneity of variance problem with the raw data

## 5.2.4  Results By Region

Table 14 presents a comparison of respondent scores categorized by geographic region.  Contrast analysis revealed that respondents from the West reported significantly higher workload (job factor II), affiliative concern (job factor IV), stress arousal, stress-related dysfunction and autonomic arousal, and illness within one year mean scores than did their counterparts from other geographic regions.  Again, this pattern of job stress, stress arousal, and illness is consistent with the causal model derived for the overall respondent group.  The potential significance of this pattern warrants further investigation.

Table 14

Comparison of Respondent Scores By Region

Geographic Region

| | South (n=343) | | Mid-Atlantic (n=294) | | Northeast (n=74) | | Midwest (n=372) | | Southwest (n=192) | | West (n=278) | | F Value |
|------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|---------|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.13 | .64 | 2.23 | .63 | 2.15 | .70 | 2.18 | .64 | 2.22 | .67 | 2.10 | .67 | 1.64 |
| F2 | 2.82 | .80 | 2.90 | .79 | 2.70 | .80 | 2.79 | .82 | 2.67 | .85 | 2.89 | .82 | 2.61* |
| F3 | 2.00 | .87 | 1.93 | .90 | 1.92 | .82 | 1.94 | .84 | 1.98 | .85 | 2.12 | .88 | 1.86 |
| F4 | 2.37 | .73 | 2.35 | .73 | 2.14 | .72 | 2.25 | .72 | 2.32 | .70 | 2.40 | .72 | 2.85* |
| SAS | 38.56 | 9.61 | 39.04 | 9.08 | 36.75 | 9.34 | 37.96 | 8.20 | 38.30 | 8.87 | 39.91 | 8.88 | 2.33* |
| ACC | 15.30 | 12.92 | 14.96 | 11.60 | 10.92 | 12.52 | 13.80 | 10.84 | 15.22 | 11.94 | 16.46 | 12.11 | 3.33**[1] |
| SIR1 | 925.77 | 802.62 | 920.04 | 730.30 | 742.38 | 720.34 | 847.36 | 636.88 | 876.01 | 729.55 | 952.34 | 730.05 | 2.30* |

*
significant @.05 error level

**
significant @.01 error level

1
F Value calculated on the basis of ranked SIR1 scores due to a heterogeneity of variance problem with the raw data

## 5.2.5 Results By Occupation

Table 15 presents a comparison of respondent scores by occupation. Respondents were asked to select their occupation from among the following choices: 1) public accounting; 2) private industry; 3) government accounting; 4) academia; or, 5) self-employed. Only twenty-four AICPA members selected academia as their profession. Thus, to avoid potential statistical bias in the inter-occupational comparisons of respondent scores, academicians were excluded from the analysis.

Contrast analysis revealed that self-employed individuals, not surprisingly, were significantly less concerned with job control (job factor I) than their counterparts from other accounting milieu. However, these same individuals were significantly more concerned than their counterparts from other accounting milieu over their qualification to effectively perform their job function (job factor IV). Perhaps the pressure to stay abreast of knowledge over a broader spectrum of accounting (e.g., auditing, tax, systems, management advisory services, etc.), along with the direct responsibility for clients may account for this concern among self-employed accountants. In addition, respondents from public accounting reported a significantly higher concern over excessive workload (job factor II) than their counterparts from other accounting milieu. These job-related concerns were not associated with increased stress or illness among either group, however.

Table 15

Comparison of Respondent Scores By Occupation

Occupation

| | Public Accounting (n=789) | | Private Industry (n=597) | | Government Accounting (n=74) | | Self-Employed (n=120) | | F Value |
|---|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.08 | .65 | 2.36 | .59 | 2.28 | .63 | 1.77 | .71 | 41.01***[1] |
| F2 | 2.89 | .77 | 2.77 | .86 | 2.63 | .81 | 2.80 | .89 | 4.38**[1] |
| F3 | 2.08 | .87 | 1.84 | .84 | 1.73 | .71 | 2.31 | .92 | 17.66*** |
| F4 | 2.33 | .73 | 2.35 | .69 | 2.26 | .81 | 2.29 | .77 | .44 |
| SAS | 39.10 | 9.05 | 38.40 | 8.70 | 36.99 | 8.22 | 38.35 | 9.75 | 1.70 |
| ACC | 15.10 | 12.33 | 14.89 | 11.51 | 12.87 | 10.84 | 15.10 | 12.14 | .80 |
| SIR1 | 911.07 | 767.19 | 874.64 | 638.88 | 761.08 | 596.65 | 952.88 | 843.02 | .78 |

**     significant @.01 error level

***    significant @.001 error level

[1]    F Value calculated on the basis of ranked scores due to a heterogeneity of variance
       problem with the raw data

## 5.2.6 Results By Organizational Rank

Table 16 presents a comparison of respondent scores by organizational rank. Contrast analysis revealed that partner/top managers were significantly less concerned about job control (job factor I) than their counterparts at lower organizational ranks. However, this group reported significantly higher affiliative concern (job factor IV) than those individuals at the other ranks. This group also reported a significantly lower number of stress related dysfunctions and autonomic arousal than incumbents of other ranks.

Junior/staff members reported significantly higher concern over job control than incumbents of other ranks. However, among members of this group, workload (job factor II) and affiliative concern were significantly less important than to incumbents of the other ranks.

Table 16

Comparison of Respondent Scores By Organizational Rank

Organizational Rank

| | Junior/ Staff (n=100) | | Senior/ Supervisory Mgt. (n=246) | | Manager/ Middle Mgt. (n=457) | | Partner/ Top Mgt. (n=799) | | F Value |
|---|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.57 | .61 | 2.51 | .55 | 2.42 | .51 | 1.85 | .61 | 166.27***[1] |
| F2 | 2.48 | .89 | 2.82 | .74 | 2.96 | .81 | 2.78 | .83 | 11.07***[1] |
| F3 | 1.79 | .83 | 2.04 | .88 | 1.97 | .85 | 2.01 | .88 | 2.24 |
| F4 | 2.08 | .68 | 2.30 | .77 | 2.33 | .67 | 2.37 | .74 | 5.33***[1] |
| SAS | 38.13 | 9.39 | 39.48 | 9.03 | 38.72 | 8.85 | 38.42 | 8.90 | .99 |
| ACC | 16.41 | 12.63 | 16.97 | 13.91 | 15.20 | 11.39 | 13.95 | 11.44 | 4.45**[1] |
| SIR1 | 951.80 | 765.71 | 964.38 | 803.48 | 894.09 | 665.07 | 871.00 | 731.35 | 1.53[1] |

**
    significant @.01 error level

***
    significant @.001 error level

[1]
F Value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 5.3 Demographic Analyses of Public Accounting Respondents

In that nearly half of all respondents were employed in public accounting, separate demographic analyses were conducted on members of this group. The purpose of these analyses was to attempt to uncover patterns of job stress, stress arousal, and illness among designated subpopulations within this predominant group.

### 5.3.1 Results By Organizational Rank

Table 17 presents a comparison of public accounting respondent scores by organizational rank. The only significant finding uncovered through contrast analysis was that there was an inverse relationship between rank and concern over job control (job factor I). That is, members of each successive rank were significantly less concerned with job control than were members of the preceding rank.

Table 17

## Comparison of Public Accounting Respondent Scores By Organizational Rank

### Organizational Rank

| | Junior (n=19) | | Senior (n=134) | | Manager (n=198) | | Partner (n=454) | | F Value |
|---|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.87 | .45 | 2.56 | .55 | 2.40 | .51 | 1.71 | .52 | 155.26***[1] |
| F2 | 2.84 | .88 | 2.83 | .66 | 3.00 | .78 | 2.89 | .77 | 1.89 |
| F3 | 2.21 | .86 | 2.16 | .91 | 2.10 | .89 | 2.07 | .85 | .50 |
| F4 | 2.24 | .71 | 2.23 | .76 | 2.29 | .67 | 2.37 | .74 | 1.49 |
| SAS | 39.84 | 9.61 | 40.11 | 9.17 | 38.82 | 9.02 | 38.89 | 8.87 | .74[1] |
| ACC | 15.58 | 13.46 | 17.69 | 14.84 | 15.25 | 11.71 | 14.18 | 11.59 | 1.23[1] |
| SIR1 | 859.00 | 714.57 | 1035.39 | 923.38 | 903.41 | 655.74 | 879.02 | 761.65 | .94[1] |

*** significant @.001 error level

[1] F Value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 5.3.2  Results By Primary Job Function

Table 18 presents a comparison of public accounting respondent scores by primary job function. Respondents from public accounting were asked to report the percentage of time spent in various activities. If the reported amount of time engaged in any individual activity exceeded 50 percent, the respondent was placed in that job function. Individuals not reporting a primary activity (i.e., no individual activity exceeding 50 percent) and those listing "Other" as their primary activity were placed in the mixed category.

Contrast analysis revealed one significant finding: those engaged in auditing were significantly more concerned with job control (job factor I) than incumbents of other job functions.

Table 18

Comparison of Public Accounting Respondent Scores By Primary Job Function

Primary Job Function

| | Auditing (n=176) | | Tax (n=302) | | Writeup (n=39) | | MAS (n=38) | | Mixed (n=234) | | F Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.32 | .54 | 2.06 | .70 | 2.01 | .64 | 1.96 | .63 | 1.96 | .63 | 9.52***[1] |
| F2 | 2.99 | .66 | 2.88 | .83 | 2.75 | .72 | 3.00 | .86 | 2.83 | .75 | 1.78 |
| F3 | 2.06 | .89 | 2.16 | .88 | 2.00 | .80 | 1.97 | .85 | 2.04 | .84 | 1.03 |
| F4 | 2.32 | .73 | 2.34 | .71 | 2.18 | .84 | 2.33 | .80 | 2.34 | .73 | .44 |
| SAS | 38.48 | 8.96 | 40.21 | 9.34 | 38.62 | 8.59 | 38.76 | 8.70 | 38.30 | 8.81 | 1.80 |
| ACC | 13.27 | 10.04 | 16.26 | 12.80 | 13.44 | 10.75 | 14.87 | 11.11 | 15.31 | 13.54 | 1.41[1] |
| SIR1 | 827.71 | 675.15 | 938.54 | 780.51 | 979.28 | 1057.78 | 858.34 | 633.47 | 935.75 | 779.19 | .52[1] |

***
significant @.001 error level

[1]
F Value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 5.3.3 Results By Firm Type

Table 19 presents an analysis of public respondent scores by type of employer firm. Contrast analysis indicated that members of local accounting firms were significantly less concerned with job control (job factor I) and workload pressures (job factor II) than incumbents of regional and national firms. On the other hand, national CPA firm employers reported a significantly greater concern over job control and workload than members of the other two groups.

## Table 19

## Comparison of Public Accounting Respondent Scores By Firm Type

### Firm Type

|  | National CPA Firm (n=177) | | Regional CPA Firm (n=59) | | Local CPA Firm (n=570) | | F Value |
|---|---|---|---|---|---|---|---|
|  | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | [1] |
| F1 | 2.33 | .54 | 2.19 | .72 | 1.96 | .65 | 24.98*** |
| F2 | 3.10 | .77 | 2.97 | .81 | 2.81 | .74 | 10.55*** |
| F3 | 2.12 | .92 | 2.12 | .89 | 2.09 | .85 | .11 |
| F4 | 2.37 | .70 | 2.26 | .81 | 2.32 | .73 | .59 |
| SAS | 39.19 | 8.73 | 37.91 | 8.35 | 39.18 | 9.11 | .53 |
| ACC | 14.22 | 10.70 | 14.25 | 9.42 | 15.32 | 12.51 | .19 [1] |
| SIR1 | 818.64 | 558.12 | 758.03 | 697.72 | 954.53 | 838.21 | 2.12 [1] |

*** significant @.001 error level

[1] F Value calculated on the basis of ranked scores due to a homogeneity of variance problem with the raw data

## 5.3.4  Results By Firm Size

Table 20 presents a comparison of public accounting respondent scores by firm size.  Public accounting respondents were asked to indicate the the size of their firm in terms of approximate number of employees from among the following response options: 1) Under 100; 2) 101-500; 3) 501-1,000; or, 4) Over 1,000.  Only thirteen individuals reported 501-1,000 as their firm size; thus, to avoid potential statistical bias in the inter-size comparisons of respondent scores individuals in the 501-1,000 category were excluded from the analysis.

Contrast analysis revealed that members of small (under 100 employees) firms were significantly less concerned with job control (job factor I) and workload pressures (job factor II) than members of larger firms.  On the other hand, large (over 1,000 employees)  firm members reported a significantly greater concern over job control and workload than members of the other two groups.

In terms of reported stress, members of middle-size (501-1,000 employees) firms were significantly lower than members of large and small firms.

## Table 20

## Comparison of Public Accounting Respondent Scores By Firm Size

### Number of Employees

| | Under 100 (n=563) | | 101-500 (n=60) | | Over 1,000 (n=115) | | F Value |
|------|---------|---------|---------|---------|---------|---------|---------|
| | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | $\bar{x}$ | s.d. | |
| F1 | 2.00 | .65 | 2.14 | .61 | 2.34 | .57 | 15.76*** |
| F2 | 2.82 | .76 | 2.97 | .65 | 3.14 | .82 | 10.01*** |
| F3 | 2.09 | .86 | 1.97 | .71 | 2.08 | .96 | .40 |
| F4 | 2.31 | .73 | 2.32 | .84 | 2.34 | .69 | .10 |
| SAS | 39.25 | 9.16 | 36.17 | 8.69 | 39.75 | 8.60 | 3.96*[1] |
| ACC | 15.45 | 12.60 | 12.98 | 11.01 | 13.58 | 10.00 | 1.27[1] |
| SIR1 | 934.05 | 804.98 | 842.02 | 683.03 | 806.04 | 561.43 | .38 |

\*
  significant @.05 error level

\*\*\*
  significant @.001 error level


[1]
  F Value calculated on the basis of ranked scores due to a heterogeneity of variance problem with the raw data

## 6.0    GENERAL STRATEGIES FOR REDUCING THE
## PATHOGENIC EFFECTS OF EXCESSIVE STRESS

The results of the present investigation indicate that stress arousal is predictive of stress-related illness and dysfunction among individuals in the AICPA respondent group.  Further, it was found that four generic job-related conditions: 1) excessive workload; 2) lack of control over one's job; 3) interference with interpersonal relationships; and, 4) feeling underqualified for one's job, were all correlated with stress-related disease and dysfunction, but that this relationship arose by virtue of the fact that these job factors possessed the propensity to cause cognitive and affective discord (i.e., stress arousal).

In this section we shall discuss several options for reducing the pathogenicity (i.e., the ability to cause illness) of the stress encountered by the respondents.  In order to formulate reasonable options for stress reduction, we must first take a closer look at the stressors which emerged from the investigation and analyze the factors of which they are comprised. The degree to which organizational strategies and/or personal strategies can be used to offset or diminish the presence of these stressors and their core constituent factors, the greater the success that will be achieved in overall stress reduction.

The most pathogenic job stressor reported by the respondents was that of excessive workload.  This stressor is generically the same as the well-recognized stressor "overload" (Girdano and Everly, 1986).  Simply defined, "overload" refers to a condition where the demand placed upon the individual exceeds the individual's ability to meet that demand.

Overload results from several common factors:

1) inadequate staff available to meet job demands;

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2) excessive performance expectations placed upon staff members by super-
visors;

3) excessive performance expectations placed upon staff members by
themselves (often seen in high achievement-oriented, aggressive
individuals); and,

4) inadequate planning to meet seasonal demand variations.

The second most pathogenic job stressor was found to be a lack of control
over one's job. This stressor conforms to a wide range of previous studies
which have consistently shown the lack of control over one's life or job to
be a powerful stressor (see Everly, 1989, for a review). A perceived lack of
control results from the following conditions:

1) the perceived inability to alter important aspects of one's life or job;

2) the inability to predict the emergence of stressors;

3) the inability to understand the nature and origins of stressors; and,

4) a perfectionistic attitude which prevents an individual from accepting
the fact that problems are a common facet of normal business life.

The third most pathogenic job stressor was found to be the condition where
job demands interfered with interpersonal relationships. This subtle, yet
powerful stressor can be seen as threatening to a critical aspect of good
health and good work performance, i.e., social support. That is, when job
demands interfere with interpersonal and family relationships, they can be
seen as undermining social support and networks for interpersonal
affiliation, approval, and self-esteem.

Finally, this study found that feeling underqualified was a job stressor.
Feeling underqualified can not only contribute to conditions of overload and
feeling out of control, but it is frustrating and demoralizing as well
(Girdano and Everly, 1986).

In order to mitigate the pathogenic effects of the aforementioned
stressors, various worksite-based interventions may be employed. Each of
these is discussed below.

Staffing and recruiting personnel should be encouraged to make realistic assessments of personnel requirements, both for core staffing and temporary staffing requirements to meet seasonal fluctuations in demand. Accounting temporaries and student interns may provide valuable assistance during periods of excessive workload demand, especially if the same individuals can be used repeatedly after they are familiarized with the firm's operating procedures.

Supervisory personnel should make careful assessments of the capabilities of staff personnel at various experience levels to avoid pushing individuals beyond reasonable levels of expected performance. In addition, it is a well known but often ignored axiom that subordinates should receive authority commensurate with assigned responsibility for the successful completion of engagements or assignments. Obviously, appropriate assessments of proper job scope and depth would aid in this strategy.

During the hiring process recruiters should look beyond an applicant's technical skills and attempt to asses his/her ability to adapt to the organization; this, to the degree allowed by equal employment opportunity mandates. Some employers utilize psychological assessments as an integral aspect of hiring and promotional procedures.

A common, yet self-defeating syndrome often seen among professionals is the tendency to overestimate their ability to cope with stress and meet extraordinary demands. Once again, psychological assessments may be of value in assisting staff members to assess their personal strengths and weaknesses. No one benefits from the "hot shot" overachiever who "burns out" at age 35 or has a heart attack at age 40. Modern psychological testing technologies now make it possible to create psychological profiles of virtually any organization as well as identifying the psychological profile of the "ideal"

staff member. Accounting firms could, no doubt, benefit by self assessment via these instruments.

Organizational cohesion strategies can be utilized by organizations of virtually any size as means for stress reduction. It is well accepted that interpersonally cohesive organizations are able to hold on to their employees longer and are capable of withstanding external demands far better than are non-cohesive organizations. Generic means of increasing cohesion would include: a) ensuring that staff members have access to information which affects them; b) utilizing "quality circles"; c) giving staff members some degree of perceived participation in the decision-making process; and, d) encouraging interaction among staff members (and their families) through social events outside of the work environment, when appropriate.

In-house training of staff members in stress management strategies may be in order for firms incurring excessive stress-related employee costs. However, the success of this potentially useful and cost-beneficial intervention hinges on the proper selection of the appropriate type of training experience. Not all stress management training experiences are alike. The following would be topics that should be included in any in-service program for staff members:

a) the nature of stress;

b) stress as a risk factor for illness and disease;

c) the ways which stress contributes to illness;

d) common sources of stress among accountants and their families;

e) common symptoms of excessive stress;

f) organizational coping strategies;

g) personal coping strategies –
   * time management
   * assertiveness training/methods for handling hostility
   * setting realistic expectations for success
   * cognitive restructuring

* the use of relaxation techniques
* proper exercise
* proper diet for stress reduction;

h) stress management as a tool to increase performance; and,

i) utilizing (in-house or community based) health professionals in combating excessive stress.

Organizations may also provide in-house training for supervisors which teach them to recognize potential sources and early signs of excessive stress and "burnout" in staff members, and to assist individuals who appear in need of professional counseling.

Organizations may elect to set up a confidential referral network with allied health professionals (especially psychologists and psychiatrists) for staff members who appear to be exhibiting signs of excessive stress or "burnout". These health professionals would practice outside of the organization. For motivational purposes, firms may wish to pay for the first few visits; if further visits are required, the standard health insurance coverage can be activated. One caveat: potential cooperating health professionals should be screened to assess their expertise in treating stress-related disorders.

Finally, firms may find that the best way to intervene with excessive stress is to not only try to structure the organization and personnel policies in such a manner as to prevent it, but also to encourage employees to practice health promotion as a lifestyle. Historically, some organizations have chosen to provide or subsidize memberships to health clubs for employees and their families. Other organizations have attempted to foster health promotion internally through the use of various strategies. The textbook entitled <u>Occupational Health Promotion</u> (Everly and Feldman, 1985) may serve as a useful guide for the establishment of health promotion interventions designed to reduce occupational stress.

The adoption of any stress management intervention, however, must be made on a case-by-case basis. It would be unacceptable to merely extract any of the potential stress-ameliorating strategies delineated above without an analysis of the idiosyncratic nature of the environment in which the interventions would be applied. This analysis would, by necessity, be conducted by appropriately trained professionals.

## 7.0 STRESS REDUCTION STRATEGIES AVAILABLE TO THE AICPA

In order to facilitate the stress management process, organizations such as the AICPA, NAA, IIA, and state and local CPA societies need to assist their members in recognizing stress as a universal aspect of life, not just the accounting profession, and to endorse and facilitate its control and reduction. Such efforts would be no different than these professional associations recognizing cholesterol as a risk factor for heart disease, then endorsing efforts to lower the presence of that risk factor. Such sanctions by recognized professional organizations are likely to go a long way toward reducing the pathogenic and dysfunctional effects of excessive stress on employees, as well as the subsequent dollar cost to employers and insurance carriers.

Several options exist for the AICPA should it decide to take a more active role in combating the effects of excessive stress among its members. These options, outlined below, have the potential to simultaneously improve member health while reducing stress-related worker's compensation claims to insurance carriers.

First, the Institute might consider promoting a three-part series on health education and stress in the Journal of Accountancy designed to inform the readers of the nature, causes, and intervention options relevant to stress among accountants. The first part would discuss the nature and causes

of stress arousal with specific emphasis on the outcome data of the present study.  Part 2 would enumerate the early warning signs and general symptoms of stress-related dysfunctions and "burnout."  Part 3 would contain a detailed discussion of both organizational and personal stress reduction strategies.  Given the high number of respondents in the present study who expressed a desire to receive additional information on the project, this appears to be a logical and cost-effective means of educating the membership at large.

Second, the Institute might consider sponsoring a two-day continuing education seminar on a national basis relevant to the topic of stress, health and disease.  This national stress management offering would be designed to teach attendees the practical aspects of recognizing and managing stress among professional accountants.  With the possible incentive of continuing education credits to participants, this option would: 1) potentially reach AICPA members with a differential need for stress management assistance; and, 2) in all likelihood, be cost beneficial to the Institute.

A third option to the Institute would be to establish a national board to study and make further recommendations on the topic of stress among accountants.  The board could be viewed as an operational vehicle which utilizes the results and recommendations from the present study as a starting point toward accomplishing the goals of reducing stress among Institute members and stress-related costs to affected insurance carriers.

In collaboration with Rollins Burdick Hunter Company, the AICPA might also consider setting up a national health promotion program for its members. This program could consist of: 1) arrangements with national health club chains (or local facilities or hospitals via state and local CPA societies) to offer reduced membership fees for Institute members; 2) offering lower insurance rates to Institute members who practice selected health promoting

activities on a regular basis (e.g., non-smokers, those who receive annual physical examinations, etc.); and/or, 3) assisting targeted firms in establishing on-site stress management programs.

Finally, the Institute might consider offering reduced rates to members for completing health risk appraisal assessments. These are typically self-administered assessments of health-related risk factors which have shown to be useful health education devices. These instruments appear to have some effect in terms of increasing awareness of lifestyle health risk factors and improving compliance in the practice of health promotion, e.g., proper diet, exercise, etc.. Johnson & Johnson, Control Data, Dupont, and IBM are among the growing list of companies that have utilized health risk assessments for increasing employee awareness.

The aforementioned interventions contain various strategies that can be utilized by individuals, organizations, or professional groups (e.g., the AICPA) to reduce pathogenic stress arousal and promote health. In the final analysis, true stress management must occur at the individual level, as the data indicate; nevertheless, employers and professional groups can do much to legitimize, endorse, and promulgate stress management among their members.

# APPENDIX A

## JOB TENSION INDEX

All of us occasionally feel bothered by certain kinds of things in our work. Presented below are a list of things that sometimes bother people. Place a number in the space to the right of each question that indicates how frequently you feel bothered by each of them. Please respond on a five point scale where:

1 = Never;   2 = Rarely;   3 = Sometimes;   4 = Often;   5 = All the time

_____  1. Feeling that you have too little authority to carry out the responsibilities assigned to you

_____  2. Being unclear on just what the scope and responsibilities of your job are

_____  3. Not knowing what opportunities for advancement or promotion exist for you

_____  4. Feeling that you have too heavy of a work load, one that you can't possibly finish during an ordinary day

_____  5. Thinking that you'll not be able to satisfy the conflicting demands of various people over you

_____  6. Feeling that you are not fully qualified to handle your job

_____  7. Not knowing what your supervisor thinks of you, how he/she evaluates your performance

_____  8. The fact that you can't get information needed to carry out your job

_____  9. Having to decide things that affect the lives of individuals, people that you know

_____ 10. Feeling that you may not be liked and accepted by the people you work with

_____ 11. Feeling unable to influence your immediate supervisor's decisions and actions that affect you

_____ 12. Not knowing just what the people you work with expect of you

_____ 13. Thinking that the amount of work you have to do may interfere with how well it gets done

_____ 14. Feeling that the job needs to be enlarged and made more demanding

_____ 15. Feeling that your job tends to interfere with your family life

## APPENDIX B

### PERSONAL LIFESTYLE SURVEY

Directions: Listed below are questions about your lifestyle. Please answer by circling the response (YES or NO) which is generally true for you at this time. This is not a test, so there are no right or wrong answers. Just answer each question as quickly and honestly as you can.

1. Do you have a supportive family or group of friends close by that you would rely on for help if you needed it? YES NO
2. Do you smoke one-half or more packs of cigarettes in an average day? YES NO
3. Do you actively (at least once a week) pursue a hobby which you use for recreation or relaxation? YES NO
4. Do you tend to smoke more when you are under high levels of pressure, stress, or anxiety? YES NO
5. Do you usually exercise at least 3 times a week for twenty minutes or longer each time? YES NO
6. During an average week, do you consume any form of medication or chemical substance (including alcohol) to help you cope or just calm you down? YES NO
7. Do you rely on religious faith to help your cope? YES NO
8. Do you tend to eat more to help you cope with high levels of pressure, stress, or anxiety? YES NO
9. Do you practice time management techniques in your daily life: Time management techniques include delegation, prioritization, and scheduling of your work and home tasks? YES NO
10. Do you tend to "keep it inside" when you find yourself under high levels of pressure, stress, or anxiety? YES NO
11. Do you practice some form of "deep relaxation" at least 3 times a week? Deep relaxation includes meditation, imagery, yoga, biofeedback, etc. YES NO
12. Do you tend to become generally angry or irritable when you are under high levels of pressure, stress, or anxiety? YES NO
13. Do you usually eat nutritionally balanced and wholesome meals at least 2 times a day? YES NO
14. Do you tend to take out your frustrations on others when you are under high levels of pressure, stress, or anxiety? YES NO
15. Do you have some place in your home that you frequently use in order to relax or be by yourself? YES NO
16. During an average week, do you take any form of medication or chemical substance (including alcohol) to help you sleep? YES NO
17. Do you tend to seek "professional" help when you are under high levels of pressure, stressor anxiety? YES NO
18. Do you drink caffeinated beverages such as coffee, tea, or cola to get you going or give you a "lift" during an average day? YES NO
19. Do you have a family or friends with whom you often share your feelings or discuss your problems? YES NO
20. Do you drink caffeinated coffee, tea, or cola to help you cope with pressure, stress, anxiety? YES NO

c
George S. Everly, Jr., Ph.D., 1981.

# APPENDIX C

## EVERLY STRESS AND SYMPTOM INVENTORY

DIRECTIONS: Listed below are questions describing personal conditions that you might experience. Please indicate how often you have recently (within the last few weeks) experienced each of these conditions. Simply circle the number, from 1 to 4, in the response scale to the right of each question in order to indicate how often each of these conditions has applied to you. This is not a test, so there are no right or wrong answers. Simply respond to each question as quickly and honestly as you can. Please be sure to answer each question.

1 - Seldom or never; 2 - Sometimes; 3 - Often; 4 - Almost always

**Within the last few weeks, how often have you found yourself...**

| | | | | |
|---|---|---|---|---|
| 1. Feeling calm? | 1 | 2 | 3 | 4 |
| 2. Annoyed? | 1 | 2 | 3 | 4 |
| 3. Under a great deal of pressure? | 1 | 2 | 3 | 4 |
| 4. Upset? | 1 | 2 | 3 | 4 |
| 5. Feeling relaxed? | 1 | 2 | 3 | 4 |
| 6. Pushed close to your limit? | 1 | 2 | 3 | 4 |
| 7. Preoccupied with recurrent thoughts? | 1 | 2 | 3 | 4 |
| 8. Having difficulty relaxing? | 1 | 2 | 3 | 4 |
| 9. Feeling tense? | 1 | 2 | 3 | 4 |
| 10. Anticipating or remembering upsetting things? | 1 | 2 | 3 | 4 |
| 11. Feeling peaceful? | 1 | 2 | 3 | 4 |
| 12. Having difficulty adjusting or just coping? | 1 | 2 | 3 | 4 |
| 13. Thinking about things which upset you? | 1 | 2 | 3 | 4 |
| 14. Feeling satisfied? | 1 | 2 | 3 | 4 |
| 15. Feeling sad or depressed? | 1 | 2 | 3 | 4 |
| 16. Feeling very tired or "run down"? | 1 | 2 | 3 | 4 |
| 17. Feeling frustrated? | 1 | 2 | 3 | 4 |
| 18. Irritable? | 1 | 2 | 3 | 4 |
| 19. Concerned or worried? | 1 | 2 | 3 | 4 |
| 20. Repeating unpleasant thoughts? | 1 | 2 | 3 | 4 |

21. Listed below are a number of bodily conditions that people sometimes experience. Please use the numbers provided to describe how often you have recently (in the last few weeks) been experiencing each condition. Place that number in the space to the left of each condition listed below. This is not a test—there are no right or wrong answers. Simply respond to this checklist as quickly and honestly as you can.

0 - Not at all
1 - Less than once a week
2 - Once or twice a week
3 - More than twice a week

| | |
|---|---|
| ____ Upset stomach | ____ Neckaches |
| ____ Change in appetite | ____ Muscle tightness |
| ____ Heart pounding | ____ Nervousness |
| ____ Lightheadedness | ____ Skin problems |
| ____ Nausea | ____ Pressure or tension-type headaches |
| ____ Anxiety | ____ Muscle spasms |
| ____ Episodes of blurred vision | ____ Abnormal heart beats |
| ____ Feeling faint | ____ Difficulty sleeping |
| ____ Grinding your teeth | ____ Chest pains |
| ____ Decreased sexual desire | ____ Hot flashes |
| ____ Sadness or depression | ____ Feeling unsteady |
| ____ Irritability | ____ Backaches |
| ____ Nervous stomach | ____ Throbbing or pulsating headaches |
| ____ Intestinal upset | ____ Difficulty in sexual responsiveness |
| ____ Diarrhea | ____ Menstrual cycle difficulties |
| ____ Hyperventilation or difficulty breathing | ____ Dizziness |
| ____ Inability to concentrate | ____ Disorientation |
| ____ Joint pain | ____ Problems in urination |
| ____ Unusually cold hands or feet | ____ High blood pressure |

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## SERIOUSNESS OF ILLNESS RATING SCALE

Conditions that you may have or previously had are listed below. Please circle the appropriate number that describes the period you were told you had the condition, or otherwise were made aware that you had the condition:

1 - Within the past year   2 - Within the past 5 years   3 - Don't know  Leave blank if you've never had the condition

| | | | | | | |
|---|---|---|---|---|---|---|
| Cold sore, canker sore | 1 | 2 | 3 | Sore throat. | 1 | 2 | 3 |
| Common cold. | 1 | 2 | 3 | Constipation | 1 | 2 | 3 |
| Nosebleed. | 1 | 2 | 3 | Headache | 1 | 2 | 3 |
| Laryngitis | 1 | 2 | 3 | Boils. | 1 | 2 | 3 |
| Heartburn. | 1 | 2 | 3 | Dizziness. | 1 | 2 | 3 |
| Diarrhea | 1 | 2 | 3 | Increased Menstrual flow | 1 | 2 | 3 |
| Sinus infection. | 1 | 2 | 3 | Painful menstruation | 1 | 2 | 3 |
| Fainting | 1 | 2 | 3 | Varicose veins | 1 | 2 | 3 |
| Infection of the middle ear. | 1 | 2 | 3 | No menstrual period. | 1 | 2 | 3 |
| Psoriasis. | 1 | 2 | 3 | Hay fever. | 1 | 2 | 3 |
| Hemorrhoids. | 1 | 2 | 3 | Eczema | 1 | 2 | 3 |
| Low blood pressure | 1 | 2 | 3 | Bronchitis | 1 | 2 | 3 |
| Drug allergy | 1 | 2 | 3 | Shingles | 1 | 2 | 3 |
| Hyperventilation | 1 | 2 | 3 | Infected eye | 1 | 2 | 3 |
| Mononucleosis. | 1 | 2 | 3 | Whooping cough | 1 | 2 | 3 |
| Bursitis | 1 | 2 | 3 | Fibroids of the uterus | 1 | 2 | 3 |
| Migraine | 1 | 2 | 3 | Hernia | 1 | 2 | 3 |
| Goiter | 1 | 2 | 3 | Overweight | 1 | 2 | 3 |
| Irregular heart beats. | 1 | 2 | 3 | Anxiety reaction | 1 | 2 | 3 |
| Anemia | 1 | 2 | 3 | Pneumonia. | 1 | 2 | 3 |
| Gout | 1 | 2 | 3 | Sexual difficulty. | 1 | 2 | 3 |
| Depression | 1 | 2 | 3 | Asthma | 1 | 2 | 3 |
| Kidney infection | 1 | 2 | 3 | Arthritis. | 1 | 2 | 3 |
| Hyperthyroid | 1 | 2 | 3 | Hepatitis. | 1 | 2 | 3 |
| Glaucoma | 1 | 2 | 3 | Peptic Ulcer | 1 | 2 | 3 |
| Gallstones | 1 | 2 | 3 | High blood pressure. | 1 | 2 | 3 |
| Starvation | 1 | 2 | 3 | Collapsed lung | 1 | 2 | 3 |
| Slipped disk | 1 | 2 | 3 | Chest pain | 1 | 2 | 3 |
| Kidney stones. | 1 | 2 | 3 | Diabetes | 1 | 2 | 3 |
| Pancreatitis | 1 | 2 | 3 | T.B. | 1 | 2 | 3 |
| Deafness | 1 | 2 | 3 | Epilepsy | 1 | 2 | 3 |
| Nervous breakdown. | 1 | 2 | 3 | Blood clot in blood vessel | 1 | 2 | 3 |
| Emphysema. | 1 | 2 | 3 | Alcohol Abuse. | 1 | 2 | 3 |
| Drug Abuse | 1 | 2 | 3 | Blood clot in the lung | 1 | 2 | 3 |
| Manic depressive psychosis | 1 | 2 | 3 | Stroke | 1 | 2 | 3 |
| Schizophrenia. | 1 | 2 | 3 | Heart attack | 1 | 2 | 3 |
| Brain infection. | 1 | 2 | 3 | Bleeding in brain. | 1 | 2 | 3 |
| Uremia | 1 | 2 | 3 | Cancer | 1 | 2 | 3 |
| Leukemia | 1 | 2 | 3 | | | | |

## SIRS - Weighted Illness Values

Conditions that you may have or previously had are listed below. Please circle
the appropriate number that describes the period you were told you had the
condition, or otherwise were made aware that you had the condition:

1 - Within the past year    2 - Within the past 5 years    3 - Don't know  Leave
blank if you've never
had the condition

| | 1 | 2 | | 1 | 2 |
|---|---|---|---|---|---|
| Cold sore, canker sore | 43 | 43 | Sore throat | 74 | 74 |
| Common cold | 62 | 62 | Constipation | 81 | 81 |
| Nosebleed | 73 | 73 | Headache | 88 | 88 |
| Laryngitis | 84 | 84 | Boils | 96 | 96 |
| Heartburn | 98 | 98 | Dizziness | 149 | 149 |
| Diarrhea | 118 | 118 | Increased Menstrual flow | 154 | 154 |
| Sinus infection | 150 | 150 | Painful menstruation | 163 | 163 |
| Fainting | 155 | 155 | Varicose veins | 173 | 173 |
| Infection of the middle ear | 164 | 164 | No menstrual period | 175 | 175 |
| Psoriasis | 174 | 174 | Hay fever | 185 | 185 |
| Hemorrhoids | 177 | 177 | Eczema | 204 | 204 |
| Low blood pressure | 189 | 189 | Bronchitis | 210 | 210 |
| Drug allergy | 206 | 206 | Shingles | 212 | 212 |
| Hyperventilation | 211 | 211 | Infected eye | 220 | 220 |
| Mononucleosis | 216 | 216 | Whooping cough | 230 | 230 |
| Bursitis | 222 | 222 | Fibroids of the uterus | 234 | 234 |
| Migraine | 242 | 242 | Hernia | 244 | 244 |
| Goiter | 283 | 283 | Overweight | 309 | 309 |
| Irregular heart beats | 302 | 302 | Anxiety reaction | 315 | 315 |
| Anemia | 312 | 312 | Pneumonia | 338 | 338 |
| Gout | 322 | 322 | Sexual difficulty | 382 | 382 |
| Depression | 344 | 344 | Asthma | 413 | 413 |
| Kidney infection | 374 | 374 | Arthritis | 468 | 468 |
| Hyperthyroid | 393 | 393 | Hepatitis | 488 | 488 |
| Glaucoma | 426 | 426 | Peptic Ulcer | 500 | 500 |
| Gallstones | 454 | 454 | High blood pressure | 520 | 520 |
| Starvation | 473 | 473 | Collapsed lung | 536 | 536 |
| Slipped disk | 487 | 487 | Chest pain | 609 | 609 |
| Kidney stones | 499 | 499 | Diabetes | 621 | 621 |
| Pancreatitis | 514 | 514 | T.B. | 645 | 645 |
| Deafness | 533 | 533 | Epilepsy | 582 | 582 |
| Nervous breakdown | 610 | 610 | Blood clot in blood vessel | 631 | 631 |
| Emphysema | 636 | 636 | Alcohol Abuse | 688 | 688 |
| Drug Abuse | 722 | 722 | Blood clot in the lung | 753 | 753 |
| Manic depressive psychosis | 766 | 766 | Stroke | 774 | 774 |
| Schizophrenia | 776 | 776 | Heart attack | 855 | 855 |
| Brain infection | 872 | 872 | Bleeding in brain | 913 | 913 |
| Uremia | 963 | 963 | Cancer | 1020 | 1020 |
| Leukemia | 1080 | 1080 | | | |

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