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**WORK AND NONWORK STRESS: PSYCHOSOCIAL RESOURCES AS
MODERATORS OF THEIR EFFECTS ON PERSONAL AND
ORGANIZATIONALLY VALUED OUTCOMES**

by

SANTOSH UPPAL BHALLA

**A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy**

Department of Psychology

Carleton University

Ottawa, Ontario

January, 1989

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the Faculty of Graduate Studies and Research
acceptance of the thesis
submitted by
Santosh Bhalla
in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

.....
Chairman, Department of Psychology

.....
Thesis Supervisor

.....
External Examiner

Carleton University

February, 1989

ABSTRACT

Previous research has demonstrated that stress experienced in the work context has dysfunctional consequences for both the workers and the organizations employing them. The importance of stress from the nonwork aspects of workers' lives and its relationship to work stress has also been recognized. It has also been demonstrated that certain personal resources and organizational behaviours may serve to moderate the effects of stress on its different outcomes. The purpose of the present study was to examine the separate and joint effects of work and nonwork stress on employee well-being and to examine the role of personal coping resources including social support from work and nonwork sources. A total of 349 employees of a large Canadian government department served as the subjects for this study. The subjects (162 males and 187 females and ranging in age from 21 to 63) were drawn from a subsample of the three typical occupational categories in Government departments (support staff, officers, supervisory/managerial staff). The subjects participated voluntarily in this study as a part of the department's stress management seminars. Two separate indices (chronic stress and life events) were used to measure work and nonwork stress. A Principal Components Analysis showed that the stress from the two domains of a

worker's life were relatively independent of each other. Multiple Regression Analyses were conducted to predict four different types of strain and two positively valued organizational outcomes using the constructs of work stress, nonwork stress and total life stress. Hierarchical Regression Analyses designed to examine the joint effects of different categories of stressors and coping variables, which were hypothesized as moderators of stress-strain were conducted. Both work and nonwork stress were found to be equally significant predictors of strain, with chronic stress being the better predictor in both domains. Total stress was found to explain variance in strain better than either work or nonwork stress alone. Personal coping resources and organizationally mediated social support were found to be significant predictors of both negatively and positively valued outcomes. These variables, however, did not make significant contribution when their role as moderators was examined. Type A Behaviour Pattern was included in this study for exploratory purposes and the results seem to confirm that it is a behavioural response to the occupational role requirements. Higher stress was reported in the nonwork life by females while no gender differences were found for work stress. Significant occupational status differences were noted for the types of stressors, and the degree of reported strain. Implications of this study for the understanding of work stress and nonwork stress are discussed.

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TABLE OF CONTENTS

	Page
Acceptance Sheet	ii
Abstract	iii
Acknowledgements	v
Table of Contents	vi
Introduction	1
The Conceptual Framework	2
Scope of the Study	13
Description of the Variables	20
Job Stress	20
Non Job Stress	27
The Individual	35
Cognitive Appraisal	37
Type A Behavior Pattern	41
Self Esteem at Work	42
Other Employee Characteristics	45
Individual's Psychosocial Resources	51
Coping and Adaptational Skills	51
Typology of Coping Processes	54
Coping with Work Stress	56
Rational/Cognitive Coping	57
Self Care and Recreation	60
Social Support	60
Strain	68

Table of Contents cont'd.

	Page
Organizational Consequences	74
Job Satisfaction	77
Organizational Commitment	80
Hypotheses and Predictions	82
Method	84
Subjects	84
Procedures	86
Measures	87
Predictor Variables	87
Criterion Variables	89
Moderator Variables	91
Results	93
Descriptive Statistics	93
Multiple Regression Analyses	114
Coping and Job Stressors	121
Coping and Strain	125
Moderated Regression Analysis for Supervisory	
Support	137
Intercorrelations of Measures	142
Chronic Work Stress	142
Nonwork Stress	149
Strain	152
Coping	156

Table of Contents cont'd.

	Page
Type A Behavior Pattern	158
Self Esteem at Work	160
Discussion	167
Summary of Findings of the Study	167
Discussion of the Findings	169
Test for Hypothesis 1	170
Test for Hypothesis 2	177
Test for Hypothesis 3	180
Test for Hypothesis 4	187
Hypotheses 5, 6, 7	190
Hypothesis 8	194
Type A Behavior Pattern	197
Self Esteem at Work	199
Conclusions and Implications for Further Research	200
References	215

List of Appendices		Page
A	Sample Statement of Qualifications for Support Category	258
B	Sample Statement of Qualifications for Officer Category	259
C	Sample Statement of Qualifications for Supervisor/Manager Category	260
D	Introduction to Part I Questionnaires	261
E	Occupational Environment Scales, Form E-2	262
F	The Work Experiences Survey	266
G	The Hassles Scale	270
H	The Life Experience Survey	273
I	Introduction to Part II Questionnaires	276
J	Personal Strain Questionnaire, Form E-2	277
K	Type A Behavior Pattern at Work	280
L	Self-Esteem at Work	281
M	Social Support at Work	282
N	Job Satisfaction	283
O	Organizational Commitment	285
P	Personal Resources Questionnaire, Form E-2	287
Q	Descriptive Statistics for Each Variable	290
R	Intervariable Correlation Matrix	291
S	Unrotated Factor Loadings (Pattern)	294
T	Sorted Rotated Factor Loadings (Pattern)	295
U	Comparison of Median Scores with the Normative Sample	296

LIST OF TABLES

	Page
1 Demographic Characteristics of Sample	94
2 Zero Order Correlations of Predictor and Moderator Variables with Criterion Variables	95
3 Canonical Correlation Analysis	97
4 Canonical Variate Loadings for Predictor (X) Variables	98
5 Canonical Variate Loadings for Criterion (Y) Variables	99
6 Principal Components Analysis	101
7 Summary of Factors Extracted from Principal Components Analysis	102
8 Correlational Matrix for Demographic Variables with Predictor and Criterion Measures	104
9 Intercorrelational Matrix of Demographic Variables	105
10 Group Differences for Occupations for Stress and Its Correlates	107
11 Group Differences for Sex on Stress and on Stress Correlates	108
12 Group Differences for Age	110
13 Group Differences for Tenure	112
14 Hierarchical Regression Analysis of Work and Nonwork (Chronic and Acute) Stress on Strain	115
15 Hierarchical Regression Analysis including Work, Nonwork Stress, Self Esteem and Type A Behavior Pattern	116
16a Comparison of the Predictive Utility of Work and Nonwork Stressors to Strain through Hierarchical Regression Analysis	118

List of Tables cont'd.

	Page
16b Comparison of the Predictive Utility of Nonwork and Work Stressors to Strain through Hierarchical Regression Analysis	119
17 Multiple Correlations of Work, Nonwork and Total Stress with Strain	120
18a Contributions of Work and Nonwork Stress to Total Stress	122
18b Contribution of Nonwork and Work Stress to Total Stress	122
19a Joint Effect of Work and Nonwork Stress on Strain	123
19b Joint Effect of Nonwork and Work Stress on Strain	123
20 Zero Order Correlation for Stressors and Outcome Variables with Coping Scales	124
21 Moderated Regression Analysis of Total Stress on Strain Using Coping as a Moderator	127
22 Moderated Regression Analysis of Work Stress on Strain, Job Satisfaction, Organizational Commitment using Coping as Moderator	128
23 Moderated Regression Analysis of Nonwork Stress on Strain using Coping as a Moderator	129
24 Recreation as Moderator of Stressors and Outcomes	131
25 Selfcare as Moderator of Stressors and Outcomes	132
26 Rational/Cognitive Coping as Moderator of Stressors and Outcomes	133
27 General Social Support as Moderator of Stressors and Outcomes	135
28 Moderated Regression Analysis of Work Stressors on Strain Using Supervisory Support as Moderator	138

List of Tables cont'd.

	Page
29 Moderated Regression of Work, Nonwork and Total Stress Using Different Sources of Support as Moderators	140
30 Moderated Regression Analysis of Stress and Strain using Coworker Support as Moderator	141
31 Zero Order Correlation of Stress Subscales and To Composite Stress Score	143
32 Regression Analysis of Work Stress (Chronic) Using Six Subscales as Predictors	144
33 Multiple Regression of Total Strain, Job Satisfaction and Organizational Commitment Using Chronic Work Stress Subscales	146
34 Multiple Regression of Different Types of Strain Using Chronic Work Stress Subscales	147
35 Intercorrelational Matrix of Different Work Stressors	148
36 Intercorrelational Matrix of Different Nonwork Stressors	150
37 Descriptive Statistics on Work and Nonwork Events	151
38 Intercorrelations of Strain Subscales and with Total Strain	153
39a Multiple Regression Analysis of Strain Using Four Categories of Strain	154
39b Intercorrelational Matrix of Work Related Outcome Variables	154
40 Zero Order Correlations of Stressors with Different Types of Strain	155
41 Zero Order Correlations of Work and Nonwork Events with Different Types of Strain	157
42 Intercorrelational Matrix of Coping Subscales and to Total Coping	157

List of Tables cont'd.

	Page
43 Zero Order Correlations of Type A Behavior Pattern (At Work) with other Stress Correlates	159
44 TABP and Occupational Differences	161
45 Zero Order Correlations of Self Esteem (At Work) with other Stress Correlates	162
46 Moderated Regression Analysis of Stressors on Strain with Self Esteem as Moderator	164
47 Regression of Stressors on Self Esteem	165
48 Hierarchical Regression of Acute and Chronic Stress Work and Nonwork Stressors	183
49 Hierarchical Regression of Work and Nonwork Negative Events	189

LIST OF FIGURES

	Page
1 An Overall Framework of Stress Dynamics	4
2 Proposed Model of Stress, Strain and Coping	19
3 Revised Model of Stress Dynamics	208

Introduction

All individuals in the course of living, encounter a variety of potentially stressful experiences, which might include such diverse events as the death of a loved one, the serious illness of family member, a transfer to a challenging job, or to an undesirable job. Such experiences may be perceived as stressful because they often require significant readjustments and adaptations for the person. Although the incidence of stressful events is correlated to some extent with such variables as socioeconomic class (Myers, Lindenthal, & Pepper, 1974) and membership in minority, racial and ethnic groups (Dohrenwend & Dohrenwend, 1974; Johnson & Sarason, 1979), probably no one is immune from stress. Given the physical and psychological demands involved in coping with stressful experiences, considerable research attention over the past two decades has been devoted to the study of the possibly deleterious consequences of stress for physical and mental health.

It is only recently that clinical and social psychologists have begun to systematically investigate the normal mechanisms used to cope with stress (Bhagat, 1983; Billings & Moos, 1981; Folkman, 1982; Latack, 1986; Maddi & Kobasa, 1984). Systematic studies aimed at examining various aspects of occupational stress are also quite a recent phenomena and have primarily concentrated on

identifying stressful job conditions and on demonstrating their relationship to worker health outcomes (Beehr & Newman, 1978; Osipow & Spokane, 1983; Van Sell, Brief & Schuler, 1981).

The term "stress" has been defined in many different ways. Many authors (Alluisi, 1982; Anisman & Zacharko, 1982; Beehr & Newman, 1978; Hogan & Hogan, 1982; McGrath, 1976; Schuler, 1980) have noted the lack of consensus on a single definition of stress and have commented upon the imprecision of the term. Despite recent efforts at conceptualization and operationalization, terms such as "strain", "pressure", "anxiety", "discomfort", "disequilibrium", and "activation", have been used interchangeably (Baum, Singer, & Baum, 1981; Davidson & Cooper, 1981; McGrath, 1976). Terminological imprecision may have lead to conceptual confusion and divergence of opinion (Motowidlo, Packard, & Manning, 1986), and certainly terminological difficulties make cross study comparisons difficult (Holt, 1982).

The Conceptual Framework

Instead of reviewing various definitions, themes and theoretical differences, a simple model is described which embeds the notion of stress into a conceptual framework. This framework is based on the model of Beehr and Bhagat (1985), and on some of the more commonly used stress models (Caplan, Cobb, French, Harrison, & Pinneau, 1975; Jick,

1985; McGrath, 1976). This model of stress encompasses the four basic tenets that have received a general consensus in the literature and integrates these four principles into a socio-psychological framework. Figure 1, taken from Jick (1985), presents a broad overview of the stress process as conceptualized by this framework.

The framework contains the following components: (1) environmental demands (Caplan et al., 1975) or potential stressors; (2) cognitive appraisal (Lazarus, 1966) of the situation or subjective stress (Caplan et al., 1975); (3) stress response or strain (eg., Caplan et al., 1975); (4) individual differences and coping (Caplan et al., 1975; Ivancevich & Matteson, 1981; Jick & Payne, 1980). The four components of this framework will be introduced briefly followed by a detailed discussion later on in this section.

According to this framework, stress is portrayed as the result of a transaction between an environmental event, for example, the possibility of a transfer to a new job, and the perception of the person. The possibility of a job transfer, an environmental event, whether threatened, impending or implemented, can be characterized in terms of its objective characteristics: severity of the change (eg., whether change is individual-directed or imposed) and the time pressure involved (eg., forewarning, information clarity and response time, etc.). Both of these dimensions, severity and time pressure, can vary

Figure 1. An Overall Framework of Stress Dynamics

Source: Jick, 1985.

independently along continua from one extreme to the other and may combine to create many different types of individual reactions. One could intuitively predict that under conditions of an unanticipated threat of a major job change, there is likely to be a higher degree of experienced stress than when the person is able to anticipate only a minor job change. However, subjective interpretations of an event may differ from the "objective" characteristics of the event (Billings, Millburn, & Schallman, 1980; Whetten, 1980). Events in the environment are stressful and meaningful only insofar as they are perceived and acknowledged by the individual as such.

This interactive model of stress emphasizes the role of intervening factors (cognitive, personality and social psychological variables) that could potentially influence the effects of stressors. Determining the response to an event depends largely on both the characteristics of the individual involved and the specific demands of the situation. Thus, stress is viewed as an individual phenomenon rooted in psychological processes that mediate between the person and environment. In effect, stressors are not viewed as having uniform effects across individuals. Rather, the outcome of a stressful event is dependent upon the meaning given to the event by the individual. Several investigators have, in fact, argued

that the physiological changes observed by Selye (1956) in animals in response to "stress" may have been due to the animals' emotional reaction to the perception of being in trouble (Lazarus, 1966; Mason, 1975a, 1975b). The ability to meet the demands of the situation or the failure to perceive the event as threatening should result in minimal physiological and behavioral changes. In contrast, perceiving a situation as stressful may force individuals to modify their behaviour, which, in turn, may provoke the psychological and physiological changes involved in the promotion of illness conditions.

Adopting a cognitive-phenomenological perspective, Lazarus and Folkman (1984) proposed the following definition of stress: "psychological stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well being" (p. 11). These investigators maintain that the two critical processes related to psychological stress in different individuals are cognitive appraisal and coping. Cognitive appraisal refers to subjective judgements about the nature and meaning of an event and to judgements about the individual's ability to cope successfully with it (Coyne & Lazarus, 1980). Coping is defined as the behavioral and cognitive efforts through which the individual manages the environmental or internal demands which tax or exceed the

individual's resources (Cohen & Lazarus, 1979). According to Lazarus and Folkman (1984), cognitive appraisal is the most important process in determining whether or not the individual views the situation as stressful.

Bhagat (1983) has stated that cognitive appraisal can be viewed as a filtering process that distinguishes and differentiates among stressful experiences along several important dimensions that may be relevant for coping and adaptation. This process helps the person to realize whether the objective condition presents a demand, a constraint or an opportunity (McGrath, 1976; Schuler, 1980), and whether it holds potential for his or her emotional and physical well-being. For example, transfer to a new job might require more training for the person (demand), restrict his/her participation in a favourable pension plan (constraint), or allow him/her to move to a more desirable work location (opportunity).

To the extent that the severity of the possible or impending event, its probability of occurrence, and the ability of the person to cope with the eventuality result in various degrees of apprehension, worry, fear, or anxiety, an environmental event will be associated with experienced stress.

The third component of this framework deals with individual's response to stress. The objective events, when perceived as stressful through the subjective

appraisal process, may lead to differential response patterns or outcomes. These outcomes for an individual may be emotional/affective, cognitive/behavioural or physiological (Jick, 1985). Manifestations of these outcomes may occur at any one or any combination of the three levels. Cobb (1974) and Kahn (1973) have used the term "strains" to refer to such personal psychological, physiological and behavioral outcomes. Strain is distinguished from illness in that strain refers to relatively minor effects and symptoms of stress, whereas illness implies seriously impaired health and disease (Holt, 1982). While many methodological and theoretical issues associated with this area continue to be controvertial (Monroe, 1982), a substantial number of studies have documented the relationship between the experience of stress and the onset of poor health, disease and various psychological disorders (Christensen, 1981). Whether the physiological consequences of stressors actually lead to illness in healthy individuals or simply to an increased vulnerability to illness is still a matter of debate (Natelson, 1983). Nevertheless, the belief that stresses are causally related to illness continues to be a major tenet of the psychosomatic approach to physical disorders.

The fourth component of the framework described here deals with the individual differences. A good deal of

research has shown that individuals confront potentially stressful situations with a variety of behaviours and cognitions that can serve to alter difficult conditions or at least mediate their impact (Burke & Weir, 1980; Folkman, 1982; Pearlin & Schooler, 1978). Pearlin, Lieberman, Menaghan and Mullen (1981) described these mediators as the resources, actions, and perceptions mobilized by individuals as they seek to avoid or minimize distress. This framework asserts that individual differences play a critical role in predicting the likelihood of experienced stress. Some of the variables identified, studied, and reported in the stress literature as mediating between objective event and perceived stress through their effect on cognitive appraisal process include personality factors such as self-esteem (London & Klimoski, 1975), locus of control (Johnson & Sarason, 1979), Type A Behaviour pattern (Chesney & Rosenman, 1980; Rosenman, 1984), dispositional optimism (Haan, 1982), learned resourcefulness (Rosenbaum & Palmer, 1984), and hardiness (Kobasa, 1979) among others.

Individual differences are important in stress research from another perspective. Research has indicated that many people, even in what are ordinarily severely stressful circumstances, do not necessarily experience adverse effects (Sarason, Levine, & Sarason, 1982). More recent investigations have addressed the role of various psychosocial variables that might serve to moderate the

effects of stress. A moderating or buffering variable is one which interacts with stressors in such a way that the relationship between stress and strain is stronger for persons characterized by low levels of the moderator variable than for those with high level (LaRocco, House, & French, 1980). Moderators have been taken to include social support (Cohen & Wills, 1985), coping skills (Pearlin et al., 1981), attributional styles (Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982), sex role orientation (Nezu, Nezu, & Peterson, 1986), problem-solving skills (Nezu, Nezu, Saraydarian, Kalmar, & Ronan, 1986), and cognitive appraisal processes (Lazarus, Coyne, & Folkman, 1982).

The importance of these psychosocial variables has been debated at length in the stress literature (Osipow & Spokane, 1985). It is interesting to note that coping and adaptation mechanisms have been used as general concepts, with some of the psychosocial variables such as cognitive appraisal process, and problem-solving skills, being traditionally subsumed under coping skills.

Coping is defined by Lazarus and Launier (1978) as efforts, both action-oriented and intrapsychic, designed to manage (ie., master, tolerate, reduce and minimize) environmental and internal demands and conflicts among them, which tax or exceed a person's resources. According to the theory, the level of stress that a person

experiences and perhaps the extent to which deleterious effects occur, depends on how well the person copes in stressful situations (Latack, 1986). Coping is initiated when a person realizes that there is a specific challenge, threat or loss that must be dealt with. The range of coping strategies or processes that can be simultaneously or sequentially employed is broad, and the best choice among the strategies is often defined by the situation (Folkman, Schaefer, & Lazarus, 1979). Coping strategies are hypothesized to have at least two major functions: mediate person-environment relationships in an instrumental or problem-solving mode and/or selectively control and manage the stress and strain reactions (Bhagat, 1983). Although the importance of coping is acknowledged in theoretical (Lazarus & Folkman, 1984) and practitioner-oriented literatures (Switzer, 1979), empirical studies of coping related to work setting are relatively few in number (Burke & Belcourt, 1974; Dewe, Guest, & Williams, 1978; Folkman, 1982; Osipow & Spokane, 1988; Pearlin & Schooler, 1981).

The moderating role of coping in the stress and strain relationship has been proposed by many (e.g., Billings & Moos, 1982; Ruskies & Lazarus, 1980), although the data base to support this proposal is not well developed. Osipow and Spokane (1983) proposed a closed system model in which occupational stress, strain, and coping resources

interact. The system postulates that even though perceived occupational stressors may be equal for two people, variability in coping resources may serve to moderate differentially the resulting strain. The observed positive correlation between stress and strain together with the negative correlations between strain and coping is evidence in favour of the model (Osipow & Spokane, 1983). Based on the results of a recent study, Osipow and Davis (1988) have reported a limited degree of empirical validation for the moderating role of coping resources. With a sample of full time university students, they found that all coping resources used in their study (recreation, selfcare, rational/cognitive and social support) were effective in reducing the global strain, and as predicted, use of high and low levels of the resources made significant differences in the direction of the stress and strain relationship.

Social support is another moderator variable, primarily environmental in nature that may influence the effect of the stressor on the individual as well as the degree and type of coping. Social support, as a measure of psychosocial environment, has received a great deal of researchers' attention. Social support has been found by some investigators to aid stressor resistance under high-stress conditions but to have little effect under low stress-conditions (Bhagat, 1983; Wilcox, 1983). This has

been called the stress 'moderating' or 'buffering' effect (Cobb, 1976; LaRocco et al., 1980). Other studies, however, have found that social support has an effect on well-being that is independent of stress level (Andrews, Tennant, Hewson, & Vaillant, 1978). This is termed the 'direct' effect. The literature dealing with the stress-moderating versus the direct effect of social support is discussed in a later section.

Scope of the Study

Although each of the components of the stress process model described here has been well researched, few studies to date have combined all the elements in a single research effort. In the area of environmental stressors, the trend has been to study stress-related factors either in the workplace or in employees' personal lives. Very little research has attempted to study the joint effect of these two potential sources of stress. Bhagat, McQuaid, Lindholm, and Segovis (1985) included stressors from employees' job and personal life both of positive and negative nature to suggest a construct called "total life stress" (Bhagat et al., 1985, p. 20). In this research, the hypothesis concerning construct validation of total life stress was supported for negative total life stress. The patterns of correlations between positive total life stress and the six affective outcomes were in the predicted direction but weak. More relevant to the discussion here,

these researchers reported that although negative total life stress, the sum of job and non-job stress, was a superior predictor of all six stress outcomes than negative non-job stress alone, negative job stress was the best predictor for five out of six outcome variables.

The finding of a clear relationship between negative personal life stress and the stress outcomes indicates that people may not separate their personal lives from their job lives; there is a spillover of the effects of nonwork stress on organizational outcomes. Cooke and Rousseau's (1983) research also demonstrated that the impact of stressors that occur outside the employee's work situation have important implications for both affective and behavioural outcomes. Holt (1982) has argued that stressful events in the non-occupational part of a worker's life can lower his or her resistance to occupational stress or cause sensitization to certain classes of job stress. Recent demands by employee groups and decisions by employers to offer such family supports as childcare and flexible work schedules are based on the assumption that such benefits facilitate employees' ability to handle family matters and will therefore enhance their work performance, commitment and satisfaction (Crouten & Garbarino, 1982). Similarly, Rousseau (1978) and Near, Rice, and Hunt (1980) have reviewed literature which showed that affective experiences at work are indeed related to

affective outcomes outside of work. Bhagat (1983) and his associates (Bhagat et al., 1985) have argued for a linear interaction between job and non-job stress.

The additivity assumption seems to be supported in life events research. As Brown and Harris (1978) have noted the additivity assumption has not been tested systematically. Thoits (1983) suggests that systematic comparisons might reveal functions other than an additive one. It is also possible, as Bhagat (1983) has argued, that individuals might attempt to compensate for the effects of stressful life events by attempting to overperform in their work roles. This might distort the magnitude of the impact of stressful organizational events on stress outcomes. Again, because some people might find it easier to talk about the work stressors they have in common with many of their coworkers, this may also tend to distort the impact of work stressors.

In this study, stressors from both the work environment and non-work environment will be examined for their combined as well as their separate effects on personal and organizational outcomes. Both chronic and acute stressors will be examined. Chronic stressors are defined as persistent, repetitive and almost routine stressors encountered in daily life (such as commuting to work, not having enough time to do things) and acute stressors are defined as being potent, time-limited stressors such as job

loss, an accident (Lazarus & Cohen, 1977). For the work domain, stressors will be operationalized in terms of the work life events (acute stress) and as role based factors in the work setting (chronic stress). For non-work stressor measurement, the impact of life events (acute stress) and of daily hassles (chronic stress) will be included in the study. Life events are described as events that force individuals to undergo social readjustments to which they must of necessity cope and adapt (Holmes & Rahe, 1967). Daily hassles are conceptualized as the irritating and frustrating difficulties which to some degree characterize everyday transactions with the environment (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). The events measures will include both positive and negative events to allow comparisons between positive stress and negative stress. Positive stress is defined as stress resulting from those life events that produce a state of challenge coupled with disruptive pleasure for the individual (Bhagat et al., 1985). Interpreting this definition in terms of Schuler's (1980) conceptualization of opportunity stress, positive stress can be viewed as a dynamic condition in which an individual is confronted with an opportunity for being (or having or doing) what he or she desires. Negative stress on the other hand is defined as resulting from the events that produce excessive and undesirable constraints or demands on the individual.

In terms of individual variables, few studies to date have included both intraindividual and environmental coping resources in their design as moderators of the stress-strain relationship. Inclusion of both types of variables is especially important given that social support and coping researchers now recognize that the effects of social support may vary as a function of individual differences (eg., Heller & Swindle, 1983; Sarason, Sarason, & Shearing, 1986). In this study two coping strategies were examined: a) rational/cognitive coping, b) recreation and self-care behaviours. As has been previously, the rational/cognitive type of coping strategy is hypothesized to mediate the stress-outcome relationship in an instrumental or problem-solving mode whereas recreation and self-care behaviours are hypothesized to help reduce or manage the impact of stress (Bhagat, 1983). Social support in the employee's work and home life will be examined for its role in moderating the relationship between stress and postulated outcomes both in the personal and organizational terms.

Two outcome categories will be examined in this study. These are personal strain (psychological, physical, vocational and interpersonal domains) and the organizational variables of job satisfaction and organizational commitment. Separate relationships between non-work stress and personal strain and between work stress and personal strain as well as organizational outcomes will

be examined.

Examination of individual differences in terms of age, sex, type of job and the length of service with the organization can provide valuable descriptive information on many of the predictor, moderator and outcome variables. For descriptive purposes, two other individual characteristics are of interest in this study. These are: a) individual's feeling of self esteem in relation to work, and b) individual work behavior style in terms of the degree of Type A Behaviour Pattern (TABP) individuals manifest in the work setting.

The conceptual model for this study, including the variables of interest for each of the components, is presented in Figure 2.

Figure 2. Proposed Model of Stress, Strain and Coping

Description of the Variables

Job Stress

Research on job stress has concentrated on identifying stressful conditions in the work environment and demonstrating their relationship with health outcomes. Job stress, also called "work stress", or "occupational stress" has been conceptualized in many different ways as a function of the theoretical position of individual investigators (Schuler, 1980). Work stress research is necessarily multidisciplinary involving epidemiologists, organizational and social psychologists, occupational health workers, as well as those interested in adult development and aging. Perhaps the largest body of systematic research in occupational stress has come from social psychologists and has been based upon role theory (Beehr, Walsh, & Taber, 1976; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; French, 1973).

According to the social psychological perspective of role theory, the culture defines how the different roles or functions necessary to group life are to be performed. Roles may be assigned on the basis of such characteristics as sex and age, or membership in a class or occupational group. This group membership defines a person's relationship to the total society, delimits his or her cultural participation (Kluckhohn, Murray, & Schneider 1964), and prescribes behavior appropriate to the defined

role. When individuals play these various roles, role enactments or "performances" (Goffman, 1959) are legitimate in the sense that they are not seen as "acted", "put on" or "faked". From a social psychological perspective, the job situation is one in which the individual enacts a special role, the role of being a worker, doing a job in ways largely specified by an organisation with a normative culture.

Individuals at work are frequently confronted with situations in which they may be required to play a role which conflicts with their value systems or to play two or more roles which conflict with each other. Additionally, the single or multiple roles which confront the individual may not be clearly articulated in terms of behaviors or performance levels expected. The former situation is referred to as role conflict and the latter as role ambiguity (Kahn et al., 1964).

Other work-related stressors that have emerged from a comprehensive empirical review of the relevant literature appear to be role load, role insufficiency, responsibility for other people, and the physical environment in which people have to work (Gupta & Beehr, 1979; Kahn & Quinn, 1970; Parker & DeCotiis, 1983).

Role conflict is defined as incongruity of the expectations associated with a role (Van Sell, Brief, & Schuler, 1981). Incompatible expectations may arise from a single role sender, "intrasender role conflict" (Beehr,

1985), or from two different role senders, "intersender role conflict". An example of the intrasender role conflict would be the situation in which a subordinate is expected to get information that is not available through normal channels and yet is required not to go outside normal channels to obtain the information. As an example of intersender role conflict, consider a customs officer who must enforce the customs and immigration laws at the same time as he or she meets the public's expectation of sensitivity and efficiency from a public servant.

Role conflict may also occur when the set of role demands contain contradictory expectations; when role expectations conflict with some attribute (trait, preference, value, or moral principle) of the person or when there is inter-role conflict, e.g., conflicting demands about allocation of time and attention to job and family (Cooper & Marshall, 1976). Role conflict is relevant as a stressor in the work context because of the documented relationship between measures of role conflict and outcomes such as job dissatisfaction and job related tension (Brief & Aldag, 1976; Brief, Aldag, Van Sell, & Melone, 1979; House & Rizzo, 1976; Miles, 1976).

Role ambiguity has not been elaborately conceptualized in the literature (McGrath, 1976). Generally, role ambiguity has been defined as the degree to which clear information is lacking regarding (a) the expectations associated with a role, (b) methods for fulfilling known role expectations,

and/or (c) the consequences of role performance (Graen, 1976; Kahn et al., 1964). Experimental and longitudinal studies of the effects of role ambiguity reveal that lack of clarity about behavioral expectations results in a greater concern with one's own performance rather than with the performance of the group, in lower actual and perceived group productivity, less concern or involvement with the group, lower job satisfaction, unfavorable attitudes toward role senders and increased tension and anxiety (eg., Caplan & Jones, 1975). Role ambiguity has also been causally linked to turnover (Johnson & Graen, 1973).

Role load refers to the number or intensity of the demands that are placed on an employee in his or her role as holder of a particular position within the organization. A role load involving performance and participation demands on a worker beyond what he or she can handle in a given time is known as overload. Role overload can be quantitative (the amount of work) or qualitative (the nature of work). Role overload has been shown to be significantly linked to physical fatigue (Cowell, 1983) and such physical symptoms as headaches, back ailments, gastric troubles and elevated blood pressure (Gardell, 1976). The theoretical rationale for this relationship is that people have limited capacities to acquire new knowledge, and to adapt their behaviours. When the situation imposes excessive demands, the workers may respond in dysfunctional manner, resulting in the reduction

in the quality of performance on some of the role demands and/or a rejection of some of the role demands. When demands on workers are too low or when they are asked to do repetitive work, we may talk about role underload. Levi's (1971) model of the stimulus-stress relationship suggests that stress is high under conditions of both overload and underload. 'Boredom' (the converse of "interest") is one consequence of role underload.

Role insufficiency refers to the lack of fit between individual skill and talent and job requirements, i.e., underutilization of skills. Hackman and his associates (Hackman & Lawler, 1971; Hackman & Oldham, 1975) recognized the potential importance of skill underutilization as a stressor. They used "job variety" or "skill variety" as measures of underutilization. O'Brien (1982) proposed that the use of acquired or innate skills is a central component of self-identity and that perception of a match between abilities of the person and the abilities required for the job should be a strong predictor of whether employees are satisfied with their work environment. In their earlier research, O'Brien and his colleagues (O'Brien, Dowling, & Kabanoff, 1978) have confirmed this relationship (see also research on "mental challenge" by Emery & Thorson, 1976; Emery & Phillips, 1976).

Responsibility for people refers to the responsibility

that the person has, or feels for the performance and welfare of subordinates, clients, or the public. Cobb (1973) hypothesized that responsibility for people may be one of the most important sources of occupational stress. Responsibility for people, rather than for things, has been pinpointed as a risk factor in managers, scientists and engineers in NASA, as well as among executives (Montoye, 1967). Retrospective studies of heart disease patients have also found this factor to be highly significant (Russek, 1965).

Sources of stress directly related to the work setting or to the physical environment are noise, overcrowded spaces, air pollution, monotony, travel, extremes in light temperature, hours of work and others. Certain other aspects of the physical environment (radiation, exposure to electromagnetic fields) are becoming a source of concern to employees. Employees might physically withdraw from their work and experience dissatisfaction with it because of difficulty in focussing and concentrating on their work (Oldham & Rotchford, 1983). Social density has been shown to be positively correlated with turnover intention and negatively related to individual's job satisfaction and task performance (Dean, Pugh, & Gunderson, 1975; Paulus, Annis, Seta, Schkade, & Mathews, 1976; Sundstorm, Burt, & Kamp, 1980).

For the purposes of this research, the above six types of stressors were included as the measures of chronic work stress:

- role load
- role insufficiency
- role ambiguity
- role conflict/boundary
- responsibility (for people)
- physical environment

Separate scores for these six measures of chronic work stress as well as a total chronic work stress score were obtained for each respondent.

Another measure of work environment stress used in this study was the absolute impact (negative and positive impact combined) of work related events/changes reported by the respondent for the previous year. This was termed as the acute stress.

In order to assess the magnitude of the stressors, it was decided to adopt an approach that is consistent with studies in the psychosomatic literature (Holmes & Rahe, 1967; Koch, Tung, Gmelch, & Swent, 1982). The assumption is that stress can be attributed largely to the frequency and intensity with which stressful events are experienced by an individual. The more frequent and the more intensely stressful the events as perceived by an individual, the greater the level of perceived stress (Motowidlo et al.,

1986). Stressor frequency varies according to both objective work conditions and individual characteristics. Stressful conditions may be more frequent in some jobs than in others and employees with certain characteristics may be more likely than others to behave in ways that increase or decrease the frequency with which such events occur.

Non-Job Stress

In the work stress literature, the primary focus has been placed on the ongoing sources of stress, while research in clinical psychology and in health sciences on the other hand, has as its focus the social readjustments that life events often precipitate (Bhagat et al., 1985). Following Holmes and Rahe (1967), Johnson and Sarason (1979) and Dohrenwend and Dohrenwend, (1974), stressful life events are those events such as death of a spouse or friend, serious illness, job loss, etc., which force the individual to undergo change or social readjustment.

Much of the research on the effect of life events has been based on the pioneering work of Cannon (1939) and Selye (1956). According to these theorists, life change creates a disequilibrium which imposes a period of readjustment. This readjustment period can leave the person more vulnerable to stress and its consequences. As early as the 1930s, Adolf Meyer (1935) formulated a life events chart indicating that important life changes could

often be helpful in arriving at a medical diagnosis. Since that time, Meyer's original life events chart has been modified in various ways. Until the mid-1970s, however, most research on life events focussed on demonstrating through epidemiological evidence that exposure to such events can, in fact, lead to illness (Rabkin & Struening, 1976). It is only recently that researchers have begun systematic investigations into the relationship between stress, health and psychological adjustment.

One of the most commonly accepted tests used to quantify the impact of life events is the "Social Adjustment Rating" Questionnaire (SRR), formulated by Holmes and Rahe (1967) in which 43 events (pleasant and unpleasant) have been isolated as major life change stressors and given a weight by methods of psychophysics. In the questionnaire they developed, subjects respond by checking those events that they have experienced during the recent past. Several cross cultural studies (e.g., Masuda & Holmes, 1967; Rahe, 1968) indicate that different cultures seem to give similar weights and ranking to the life events of the SRR.

Studies have indicated that negative events are more strongly associated than positive events with reports of illness (Dohrenwend & Dohrenwend, 1981; Paykel, 1979). Paykel (1979) demonstrated that items classified as undesirable or exit events (eg., death of a family member,

job loss, divorce, etc.) showed a weak but significant relationship with depressive illness whereas desirable events (eg., engagement, promotions, etc.) were not found to be associated with depression. Holmes and Masuda (1974) speculated that "life change events", by evoking adaptive efforts that are faulty in kind and duration, lower "bodily resistance" and enhance "the probability of disease occurrence" (p. 67). This hypothesis has been supported by some but criticized by many (e.g., Cleary, 1974; Rabkin & Struening, 1976). Many critics argue that life events theory ignores all intervening reactive variables, including coping responses, anticipatory reactions, and longitudinal difficulties of the individual. They suggest that an understanding of a life events' impact must take into account the physical susceptibility of the individual, the meaning of the change, the person's ability to cope with a variety of stressors, and the individual's network, ethnic and class background and cultural assumptions.

Many investigators have explored some of these individual variables in order to better understand the relationship between life changes and illness (Mueller, Edwards, & Yarvis, 1977; Sarason, Johnson, & Siegel, 1978). Two conclusions from this literature are that life stress measured in this way does not have a uniform effect on individuals and that there may be a variety of social psychological and physiological variables mediating the

effects of life stress. For example, Sarason et al. (1978) showed that some individuals may not experience depressive symptoms even under severe circumstances. Another specific individual factor that has been studied is the variability of life events on an individual as a function of the individual's perception of a given event as desirable or undesirable (Mueller et al., 1977). Life events can be positive or negative depending upon the affected individual's perception of the situation as a demand, as a constraint, or as an opportunity (Schuler, 1980).

Many life changes are embedded in lifestyle and life cycle dynamics. It has been suggested (Graham, 1974; Newgarten & Datan, 1974) that from the life cycles perspective, certain events or changes are normative, expected and planned, e.g., marriage, children leaving home, etc. When such normal transitions do not take place, this may create as many adaptive demands on the individual as are created by stressful life experiences. Some events are stressful in that they are "off time" and unanticipated which upset the sequences and rhythms of the life cycle (Newgarten, 1979). As a result, values derived from group ratings may not accurately reflect the impact of events on particular individuals, especially in cases of ambiguous events. According to Goldberg and Comstock (1976), life events can be useful indicators of the kinds of stressors which may lead to illness if the information is combined

with other data. For example, life events should be counted as stressors only if they are seen that way by the respondent.

In the past several years, an emphasis on individual differences in the perception of life events has been the basis of much research (Rahe, 1978; Chiriboga, 1977). An approach to measuring life events that allows for individual perception of an event's impact for the individual has been suggested by Sarason et al. (1978). This instrument is called the Life Experiences Survey (LES).

Several investigators have argued that the retrospective nature of the measurements of life events may be a source of contamination in the association between life events and illness. Factors such as memory, response tendencies, and affective states could conceivably influence an individual's recall of events (Anisman & Zacharko, 1982). Data on the impact of events over different time frames need to be gathered to allow for the differences in recall. The LES allows respondents to provide this information for two time periods, ie., 0-6 months and 6-12 months prior to completing the questionnaire.

Perhaps because of the problems mentioned above with the life events approach, only very weak relationships have typically been reported between life events and health

outcomes. Rabkin and Struening (1976) estimated that no more than 9% of the variance in health outcomes is explained by life events. The same predictive power is found when mental health outcomes are the focus of analysis (Thoits, 1983). Early attempts to account for such weak relationship between life events and disturbance focussed on the methodological shortcomings of the research (Dohrenwend & Dohrenwend, 1974). Several methodological improvements, such as specifying ambiguously worded items with respect to their desirability, and eliminating events, such as minor illnesses, that may be indicative of symptomatology (Dohrenwend & Dohrenwend, 1981), have been introduced. However, these and other refinements have not appreciably increased predictive power.

Recent research has presented evidence that ongoing stressors in a person's daily life may be more strongly associated with non-specific distress than are scores on life event inventories (Pearlin & Schuler, 1978; Kanner, Coyne, Schaefer, & Lazarus, 1981; Pearlin et al., 1981; Eckenrode, 1984). Life events may encompass only a small portion of the ongoing stressful aspects of an individual's environment. A number of investigations have implicated the long term strains associated with social roles and daily living as important components of stress (Ilfeld, 1977; Kanner et al., 1981; Lewinson & Talkington, 1979). Pearlin and Johnson (1971) found that day to day strains in

marriage, child rearing and household economics were associated with depressive symptomatology. For example, the chronic physical illness of one's family member was linked to reports of depression (Moos, 1981; Weinberg & Richardson, 1981). Characteristics of the physical environment such as noise, crowding, inadequate lighting and dirt can also create discomfort and stress (Kaminoff & Prosthansky, 1982). Pearlin et al. (1981) found that chronic stressors mediated the relationship between life events and depressed mood in a general population sample, while Brown and Harris (1978) suggested that continuing stressors can exacerbate the effect of life events by creating stress overload for the person.

The minor daily stressors have their origin in a person's characteristic style, routine environment or in their interaction. As such, these minor stressors might predict health outcomes that are quite independent of life events. Kanner et al. (1981) proposed that the relatively minor difficulties (hassles) and pleasures (uplifts) that characterize everyday life should be assessed separately for their impact on illness. Hassles are conceptualized as the irritating, frustration, distressing demands that to some degree characterize every day transactions with the environment. They include annoying practical problems such as losing things or traffic jams, disappointments, financial concerns, etc. In the last few years, research

has begun on what could be called hassles in particular life contexts. Examples include noise (Glass & Singer, 1972), commuting in rush hour traffic (Novaco, Stokols, Campbell, & Stokols, 1979), sex role conflicts (Pearlin, 1975), status incongruity between spouses (Pearlin, 1975), demands of children and aged parents (Levine & Scotch, 1970), and residing in areas of marked social disorganization (James & Kleinbaum, 1976). The trend is towards efforts to study the effects of a broad spectrum of every day stressors, however. Kanner et al. (1981) have developed a Hassles Scale designed to assess the frequency and severity of daily stressors (e.g., troublesome neighbours, filling out forms). Scores on this scale have been found to be more useful than the life event scale in predicting such outcomes as morale, psychological symptoms (Kanner et al., 1981), and somatic illness (DeLongis et al., 1982).

Lazarus and DeLongis (1983) reported that the correlation between life events and daily hassles is relatively weak, and have suggested that the two approaches may be mutually exclusive. It is likely that the experience of a major life event itself may not be sufficient to precipitate illness but the cumulative effects of relatively minor hassles, superimposed upon a major life event may be responsible for the onset of an illness. Nezu (1984) found that assessment of life events

and current problems each predicted a level of depressive symptoms but the influence of both sources of stress taken together was greater and was a better predictor than either considered alone.

In the present study both life events and hassles will be used as measures of non-job stress.

The Individual

An intriguing problem found in recent occupational research is that of the differential processes and the patterns of reactions to apparently the same level of job stress. Employees with the same supervisor, possessing similar educational backgrounds and experience often respond differently to stressors (Ivancevich & Matteson, 1982). Differential responses or reactions have to be recognized as having important implications in the explanation of the consequences of stress. Stress researchers are still having difficulties describing, explaining and classifying the reaction patterns to stress (Cooper & Payne, 1986; Holt, 1982; Schuler, 1980). According to the interactionist view, work environments are not inherently stressful; rather it is the relationship of the person and the environment that can result in stress. This implies that individual perceptions, constructions, and categorization of the work environment are the legitimate focus of attention (Ekehammar, 1974; Magnusson, 1981). Despite disagreement over several conceptual and

definitional issues in stress research, there seems to be consensus on the importance of individual differences in stress responsiveness. Some investigators have focussed on the role of predispositions, or enduring physiological or psychological characteristics that may influence the impact of stressful experience; others have looked at psychosocial resources available to the person and the interpersonal context in which stress is experienced, as moderators of relationship between stressors and response. Still others have examined group differences in vulnerability for stress and coping strategies.

According to Levi (1971), these differences in perception of stressors and their differential effects on individuals reflect differences in our psychobiological "programming" (physical as well as psychosocial). A complex pattern of "programming" makes all individuals unique and determines their propensity to react in one way or another. The differences can range from a physically, mentally or socially disabling reaction in those persons with the least capacity to withstand occupational and other stressors to little more than an irritation or annoyance in others. Of course, there may be stressful influences of such magnitude that they can overwhelm any individual. Individual tolerance for stress does not generalize across all stressors, e.g., tolerance for isolation and for information input overload would seem to require rather

different resources of personality (Levi, 1971). Also many attributes of personality may be implicated in an individual's response to a single kind of stressor. For example, Kahn et al.'s (1964) work showed that individual strain in reaction to role conflict was mediated by such personality traits as rigidity, extraversion, and lack of emotional sensitivity.

Cognitive Appraisal

Lazarus and his colleagues (Coyne & Lazarus, 1980; Folkman, Schaefer, & Lazarus, 1979; Lazarus, 1966; Lazarus & Folkman, 1984) have identified three types of appraisal: primary appraisal, secondary appraisal, and reappraisal. Primary appraisal refers to the process of evaluating the significance of an encounter for one's own well being. The encounter may be judged as irrelevant, benign-positive, or stressful. Evaluating the encounter as being either irrelevant or benign-positive (i.e., beneficial or desirable) does not place any unwanted demands upon the individual, and may even promote feelings of personal well being, especially if the situation is appraised as being extremely desirable. In contrast, an encounter evaluated as stressful may lead to adverse outcomes relative to mental and physical health. Stressful encounters may also involve harm or loss (i.e., damaging life events that have occurred such as injury, illness, and loss of self-esteem), threat (i.e., damaging life events that are anticipated

such as fear, anxiety, and anger), or challenge (i.e., life events that are viewed as constructive, such as eagerness, excitement, and exhilaration).

Secondary appraisal involves the evaluation of coping strategies with respect to their potential cost and probability of success (Coyne & Lazarus, 1980). The person's prior experience with the situation, generalized beliefs about self and environment, and the availability of appropriate coping resources, such as morale, health/energy, problem solving skills, social support, and material resources (Folkman et al., 1979) may influence the stressfulness of a given situation. Although coping strategies may be radically altered from one situation to the next, it is likely that the choice of a coping strategy in a given situation will depend on the mobilization of personal and social resources, the adequacy of alternative coping efforts, and on relevant feedback from the coping strategy currently employed.

The essential difference between primary appraisal and secondary appraisal is in the content of what is being evaluated. For instance, primary appraisal answers the question "Am I okay or am I in trouble?" whereas secondary appraisal answers the question "What can I do about it?". Nevertheless, the evaluative processes involved are highly interrelated and may even fuse.

Finally, reappraisal refers to the altering of prior

appraisals as a result of new information received from the environment and from within the individual. It can also be the result of altered cognitions or coping efforts which serve to reduce distress, rather than the result of an accurate assessment of the disturbance (e.g., reappraising threat or harm/loss as non-threatening or desirable).

Several factors, such as attributions (Abramson, Seligman, & Teasdale, 1978), expectancy of self-efficacy (Bandura, 1977), and negative perceptions (Beck, 1976), are thought to affect cognitive appraisals. Since appraisal refers to the evaluation of the meaning of the stressor, it is apparent that these factors may be included in the analyses of the appraisal process.

Lazarus and Folkman (1984) maintain that the most important variables affecting appraisals are person and situation factors. Person factors, such as commitments, beliefs, cognitive styles and other personal dispositions, are thought to influence the characteristics of a given situation that may be relevant to the individual's well being, and to influence the individual's understanding of the event. Situation factors are thought to be the formal properties of events that make them stressful (e.g., novelty, controllability). This implies that individuals differ with respect to how they select, perceive, interpret and use the information derived from situations, how they act in the situation, and how they react to it emotionally

and physiologically.

A variety of individual characteristics ranging from biogenic constitution to specific personality and behavior patterns have been examined in an effort to understand more clearly the relationship between stress and strain. Kobasa (1979) and her associates (Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, & Kahn, 1982) found that the personality style they labelled as "hardy" to be more resistant to the strain of life events as measured by the Holmes and Rahe Schedule of Recent Life Events (1967). Kobasa (1979) defines hardiness as a composite of three interrelated personality characteristics: "(a) the belief that individual can control or influence the events of his experience, (b) the ability to feel deeply committed to the activities of his life, and (c) the anticipation of change as an exciting chance for further development" (p. 3). Other studies of personality characteristics have found that extroverted, rigid, internally oriented individuals with a high tolerance for ambiguity, suffer less from job stress than their opposites (Brief, Schuler, & Van Sell, 1981). Type "A" and Type "B" behaviour patterns have been examined as moderators of stress and strain relationship (eg., Chesney & Rosenman, 1980; Glass, 1977; Rosenman, 1984). Type A has been described as a constellation of characteristics such as ambitiousness, aggressiveness, a chronic sense of time urgency, competitiveness, and

impatience (Rosenman & Chesney, 1982). Individuals with Type B behavior (opposite of Type A behavior pattern) characteristics might have strong goal orientations, but they seek satisfaction in less aggressive, impatient and competitive ways. Other personality attributes that have been thought relevant to stress-strain relationship are learned resourcefulness (Rosenbaum & Palmon, 1984), neuroticism (Dupue & Monroe, 1984), self-esteem (London & Klimoski, 1975), dispositional optimism (Haan, 1984), locus of control (Johnson & Sarason, 1979; Nelson & Cohen, 1983), among others. In this research, TABP and self-esteem are being explored as individual characteristics for their potential relationship with stress, strain and coping variables.

Type A Behaviour Pattern (TABP). TABP has been an area of great interest for occupational stress research. Researchers at the Institute of Social Research, of the University of Michigan have focussed on this factor as a central personality measure in many of their studies dealing with occupational stress. As the original measures of behavioural patterns reflected both the influence of stressors in the environment and the characteristics of the person, many researchers have attempted to develop a set of measures of TABP which reflect more exclusively the enduring properties of the person (Caplan, 1972; House, 1981; Sales, 1969; Vickers, 1973. Caplan and Jones (1975) reported that

the TABP conditions the effect of various job stressors on stress outcomes including physiological strain and risk factors in coronary heart disease (CHD). Howard, Cunningham and Richnitzer (1976) found that not only TABP people tend to be overloaded with work they are less satisfied with their job. They found TABP to be a fairly significant moderator of strain due to the quantitative workload.

Spillover effects of TABP in other aspects of person's life have also been studied. Jenkins (1975) suggested that TABP people are so deeply involved with their work that other aspects of their lives are relatively neglected. Burke, Weir and Du Wors (1979) investigated the satisfaction and well-being of women married to men exhibiting various levels of TABP. Higher TABP in husbands was associated with wives reporting less marital satisfaction, fewer friends and less frequent contact with those friends, greater levels of depression, worthlessness, tension, guilt, anxiety and isolation.

In this study, the degree of Type A behavior pattern of the respondents was examined for its relationship with various work stressors and coping variables. A shortened version of TABP measurement scale developed by House (1981) was used in this study to measure TABP in the work context.

Self-Esteem at Work. Self-esteem, as defined by various authors, encompasses the ideas, feelings, and strivings that are recognized, interpreted, and valued by individuals as

their own (English & English, 1958) or personal judgements of worthiness as expressed in the attitudes individuals hold toward themselves (Coopersmith, 1968).

Korman (1970) postulated three sources of self-esteem. Chronic self-esteem is seen as "a relatively persistent personality trait that occurs relatively consistently across various situations" (p. 32). Task specific self-esteem refers to an individual's feelings of competence for a particular task and is likely to be a function of past experience with the task or similar tasks. Socially influenced self-esteem is a function of others' expectations of ones' behavior when others expect a person to perform well and communicate this feeling through their words and behavior, it is expected that the person's own feelings of competence will increase. The three sources of self-esteem, Korman (1970) theorized, determine a person's level of "self perceived competence and ability for the task at hand" which in turn directly affects the level of task performance (p. 35). An individual's self-esteem may also vary across different areas of experience and according to sex, age and other role defining conditions. It is conceivable that an individual could regard himself as a student, moderately worthy as a spouse and totally unworthy as an employee.

The most potentially useful source of self-esteem from an organization's point of view is socially influenced self-esteem.

The needs relevant to a person's self-esteem at work have to do with influence and control over his or her work, the meaningfulness and importance of the work he or she does and the perception of affinity with the organization as a social system. To the extent the work allows or denies these needs, it could have an effect on a person's self-esteem. A person's level of self esteem may in turn have an influence on his/her role performance at work. For example, Zimbardo (1977) stated that people with high self-esteem are more poised socially which should enable them to engage in in the interpersonal behavior necessary for success in a group. Terborg (1985) has suggested that as people with high self esteem possess high self-images and see a match between their abilities and what is required of them. They are believed to have high performance expectancies and attach value to what they do. Self-esteem is thought to be important for stress because of consequences associated with a mismatch of abilities and job demands. As discussed earlier, role overload and underutilization, which can result from such mismatches, are important job stressors. According to Coopersmith (1967), people with low self-esteem exhibit higher levels of anxiety, and are more likely to exhibit psychosomatic symptoms and feelings of depression. Kornhauser (1965) has found high intercorrelations among the indices of self-esteem and measures of life satisfaction (.70) and among self-esteem

and mental health indices (.72).

A work environment which provides opportunities for challenging tasks, achievement and promotions, responsibility commensurate with worker abilities, etc. is conducive to the maintenance of high levels of worker self-esteem. The absence of such conditions in the workplace may deny the workers opportunities of positive self-evaluation and lower their feelings of self-worth. Terborg, Zalensky and Tubbs (1982) report that lower performance expectancies and lower self evaluations are predictive of psychological and physical factors. As previously discussed, the absence of such conditions is also associated with stressful work environment. It may be predicted that high levels of stress and strain in the work environment should be associated with lower levels of self esteem in the work situation whereas low levels of stress and strain should be associated with higher levels of self-esteem in the work context. This assumption was tested in this research.

Other Employee Characteristics. Individual differences or characteristics such as sex, occupational status, age and tenure with the employing organization are important to consider in any comprehensive research on stress. Schuler (1985) has stated that such individual characteristics may influence the magnitude, direction, duration, and intensity of an individual's physiological, psychological, and behavioral responses to stress.

Although a great deal has been written about sex differences, empirical research in this area is quite recent. Based on a review of research in the area of occupational differences between males and females, Rosen, Templeton, and Kichline (1981) report that women report experiencing more frustration, anxiety and stress than men as a result of barriers to career entry and career progression than do males. Because of the self-imposed pressure, to perform well to live up to personal expectations (Kanter, 1977) and to prove their competence in male-dominated professions (Deaux & Ullman, 1982), women report higher role ambiguity has been reported for females than do males. Higher role conflict is also reported for women in managerial and professional jobs than for males (Terborg & Zалensky, 1980; Mednick, 1982; Donnell & Hall, 1980). Graddick and Farr (1983) found that women in professional fields reported higher role conflict than males. In their study involving male and female graduate students, Terborg, Zалensy and Tubbs (1982) found no differences according to the sex of respondents where on the measures of role conflict, role ambiguity, psychological and physical symptoms of stress, satisfaction with work and with life were concerned. However, since the subjects in this study were graduate students, the issues of role conflict and ambiguity might not have been as important for this sample. Tung (1980) in a comparative

analysis of educational administrators found that males report higher stress than do females when position and tenure are controlled.

An important issue for many working women concerns the interface between work and family life. More and more women are taking on the role of wage earner, while at the same time keeping up the traditional female roles of housewife and mother. Hall (1972) has suggested that working women are more likely to face role conflict (i.e., person-role conflict, inter-role conflict) than are working men. There is evidence to support the contention that the dual-role burden on women has negative effects on women. For example, working women with jobs and family role conflicts were more likely to report being depressed than women without such conflict (Warr & Parry, 1982).

While the literature reveals that little research has been conducted regarding the possibility that there are sex differences with respect to life events, the work done so far suggests that women experience more life events than men, interpret the same changes as more stress producing, are affected more strongly by events they cannot control and react differently (Makosky, 1980). According to Bhagat (1983) this could spill over to job situation with negative effects. Research focussing on women in the work force seems to support the significant negative effects of stress on women. Ivancevich and Matteson (1980) report that rates of

heart disease and peptic ulcers are rapidly increasing among women under the age of 45. Cooper and Davidson (1982) found that working women report more psychological strain, for example, tiredness, irritation, and anxiety than do people in general. In terms of job related outcomes, the dual-role conflict creates some problems for female workers. For example, the time and energy demands placed on women keep them from upgrading their skills (Rosen, 1982) which in turn tends to limit promotional opportunities. Inability to meet home and work demands can reduce women's commitment to organizations. Graddick and Farr's (1983) study found lower organizational commitment for women than for men. However, their results also suggested that men who reported person-role conflict were far less committed than women who experienced the same role conflict. Organizational commitment thus seems more affected by the presence of conflict than the sex of the respondent. Women in the Graddick and Farr study were as involved in their jobs as men, but felt that they were treated worse than men on many job related dimensions. Mathews, Collins, and Cobb (1974) reported higher turnover rates for females than for males and Muchinsky (1977) reported higher absenteeism and sick leave usage among women. A U.S. Government sponsored study of women in traditional male jobs (U.S. Dept. of Labour, 1978), however, found little evidence of differential turnover or absenteeism or sick leave utilization. Job satisfaction

primarily depends on the nature or content of work performed. In two studies in which job content was controlled (Smith, Scott, & Hulin, 1977; Weaver, 1980), no evidence of job satisfaction differences between males and females was found.

In terms of coping with stress, women report better established support networks than do men (Beehr, 1985). However, according to Terborg (1985) they tend to be less active in coping with the sources of stress. With respect to the TABP, research suggests that in general population, men are more likely than females to report TABP characteristics. However, working men and women between the ages of 26 and 35 are reported to show the highest degree of TABP characteristics (Brief et al., 1981). TABP is related to career success and marital failure (Waldron, 1978) in both men and women, suggesting that TABP is a variable more relevant to occupational role than to gender role.

Sex differences have also been noted for self-esteem. For example, Terborg et al. (1982) in a study of graduate students reported evidence of lower perceived ability-task match among women. Morrison and Sebald (1974) did not, however, find any sex differences in self-esteem for a group of male and female managers when matched on factors such as age, education, etc. As the findings of empirical studies with regard to gender and work stress have been equivocal no predictions were made with respect to the present study.

Occupational differences have been found to be associated with a variety of stressors (Beehr & Newman, 1978). Clerical and secretarial jobs are characterised by inadequate pay, boring and repetitive tasks, little opportunity for training and advancement and little use of skills and ability (Brief et al., 1981). These are ideal conditions for role insufficiency and person-role conflict to flourish. Managerial jobs have been associated with different types of stressors. More uncertainty regarding feedback and lack of resources to do the jobs have been identified as important stressors for managers. Edwards (1980) compared job stress and the perception of job satisfaction for managerial and non-managerial employees and found no differences between the two occupational groups on these dimensions. Perhaps it is the nature of the stressors as discussed above rather than the aggregate levels of stress that should be examined. Seltzer and Numerof (1988) have suggested that people in frontline, nonsupervisory positions may be more prone to burnout than those in supervisory positions. They offer the rationale that the supervisors may more easily be able to resort to the rationalization that their problems result from inadequacies of lower-level employees, whereas the lack of adequate procedural and administrative support from supervisors may make lower-level employees more vulnerable to stress (Numerof & Gillespie, 1984).

There is some evidence to suggest that age may perform a

moderating role in job stress-outcomes except with respect to the domain of physical health (Theorell, 1976). Similarly, the length of service (tenure) has been associated with the degree of organizational commitment.

Individual's Psychosocial Resources

The role of several psychosocial resources in influencing vulnerability to stressful experiences has been well established. Psychosocial resources are attitudes, skills, or assets that are advantageous in coping with stress. Resources that have been conceptualized as influencing vulnerability/resistance to stress include intellectual capacities such as cognitive flexibility and effective problem-solving behavior, interpersonal skills such as social competence and communication skills; financial assets; coping strategies and social support (Haan, 1982; Menaghan, 1983).

The focus of this research is on the coping strategies that individuals employ to deal with stress, and the degree of perceived social support available to them in general and from sources at work (supervisors and co-workers).

Coping and Adaptational Skills. Coping emerges as one of the most important constructs in stress theory (Glass, 1979; Mills, 1976), as a major determinant of adverse psychophysiological responses (Roskies & Lazarus, 1980). Coping is viewed as a stabilizing factor that may help individuals maintain psychosocial adaptation during stressful periods (Lazarus & Folkman, 1984). At a general level,

coping has been defined broadly as "any efforts at stress management" (Cohen & Lazarus, 1979, p. 220), "things that people do to avoid being harmed by life-strains" (Pearlin & Schooler, 1978, p. 2), and "overt and covert behaviors that are taken to reduce or eliminate psychological distress or stressful conditions" (Fleishman, 1984, p. 229).

The coping response observed in a stressful situation is thought to depend on the resources available to the individual when dealing with stressors (i.e., health/energy/morale, problem-solving skills, social networks, material resources, and general and specific beliefs), which, in turn, are dependent upon the cognitive processes of appraisal.

Coping has been conceptualized by some as a dispositional trait or an habitual preference to approach problems in particular ways (Goldstein, 1973; Kessler, Price & Wortman, 1985; Moos, 1974). For example, Pearlin and Schooler (1978) and Stone and Neale (1985) have reported that people are relatively consistent in their use of coping strategies when dealing with the same problem or same role domain on different occasions. However, others have questioned the assumption that coping behavior is consistent across situations and have studied the particular coping efforts or specific actions that an individual employs to deal with different problems. Folkman and Lazarus (1980) have reported that there is little consistency across life situations and

Pearlin and Schooler (1978) have argued that there is little consistency across different role domains such as coping with work stress or marital dissatisfaction (Pearlin & Schooler, 1978).

Acknowledging the fact that a person's coping resources can vary with the situation, Lazarus has argued that a distinction be made between the individual's coping resources (i.e., health and energy, positive beliefs, problem solving skills, social skills, social support, and material resources) and the specific coping processes (i.e., decision-making, defense mechanisms, etc.) actually used in a stressful situation. For instance, at different periods in life different adaptive resources which are dependent upon experience and the degree of stress encountered may be required. Indeed, the presence of a given resource does not necessarily imply that it will deal appropriately with a stressor encountered at a given time, or, that an available coping resource will be similarly effective at a later date for the same person. For instance, the possession of a problem-solving skill does not necessarily mean that it will be effective for every stressor encountered. Furthermore, it may not be used even when such coping will be effective. In effect, Lazarus argues that every major stressful encounter will have its own requirements (e.g., illness requires very different coping demands than qualifying exams) depending on

both the available coping resources (e.g., social skills) and the specific coping processes suited to the situation (Folkman et al., 1979; Lazarus & Folkman, 1984). McCrae (1984) reported that the type of stressor significantly affects the choice of coping responses, the most pronounced differences being coping responses made to positive or negative events.

The research on coping falls into two general categories: (a) efforts to develop a typology of coping processes and (b) studies of the influence of the coping processes on adjustment.

Typology of coping processes. While there are many ways to classify coping responses (Moos & Billings, 1982), most approaches distinguish between strategies that are active in nature and are oriented toward confronting the problem, and those strategies that entail an effort to reduce tension by avoiding dealing with the problem. Lazarus and Folkman (1984) proposed a typology of coping processes that distinguishes between problem-focused strategies (efforts to modify the source of stress) and emotion-focused ones (attempts to regulate the emotional stress caused by the stressor).

Billings and Moos (1981) suggested a related typology consisting of active-behavioural strategies (overt behavioral attempts to deal directly with the problem via

direct action, e.g., changing jobs, moving away, etc.), active-cognitive strategies (efforts to manage the appraisal of the stressfulness of the event, e.g., reinterpreting the situation, denying or minimizing the threat), and avoidance strategies or symptom management (eg., attempts to avoid confronting the problem or to reduce tension indirectly by behaviours such as eating or smoking more). It should be emphasized that these different modes of coping are not mutually exclusive, and may be applied simultaneously or sequentially in any given situation.

Current conceptualizations of coping have also been shaped by social learning theorists (e.g., Bandura, 1977; Mischel, 1977) who emphasize the process of reciprocal interaction between the person and the environment, as well as by cognitive behaviour therapists (Meichenbaum, 1977). All of these formulations emphasize the active role that the individual plays in coping with environment. Coping resources can be drawn from within the person or from the environment and include at least the following categories: (1) health/energy/morales; (2) problem-solving skills; (3) social networks; (4) utilitarian resources; (5) both general and specific beliefs. Given the subjective nature of stress which means that levels of stress will differ between people in response to the same event, it is reasonable to conclude that different coping techniques

will be more or less effective for different individuals (Welford, 1974).

Coping with work stress. Although the importance of coping is acknowledged in the literature (Switzer, 1979), empirical studies of coping related to work setting are relatively few in number. One of the earliest studies by Kahn et al. (1964) identified the coping behaviours of 53 workers who responded to a series open-ended questions. The coping strategies outlined included work addiction, cynicism, idealization of others, dependent behaviors and contrived interpersonal conflict. Dewe et al. (1978), Folkman (1982) and Pearlin and Schooler (1978, 1981) have examined the range of coping strategies used as well as coping in the context of specific episodes, e.g., job loss. Burke and Belcourt's (1974) study is notable for its description of specific coping behaviours. They identified 19 types of coping behaviours related to specific stressors in a study of 137 managers and managerial trainees. Taken together, five coping behaviors accounted between them for 65 percent of the variance: talking to others, working harder and longer, changing to an engrossing non-work or play activity, changing the strategy, and approaching and withdrawing from the situation.

Pearlin et al. (1981) comment on the limitations of individual coping in the workplace where many important stress factors are beyond an individual's control, for

example management decision to reduce size of the workforce. Van Sell, Latack and Schuler (1980) have suggested that coping approaches that generalize across potentially stressful work situations should be more effective than specific coping techniques in response to specific stressors.

In this study, two types of strategies were used. The first one is the rational/cognitive coping, which is hypothesized to mediate stress-outcome relationship in problem-focus or appraisal-focus mode, and is relevant in work setting for dealing with many work stressors. The other type of coping strategies included in this study were those that are hypothesized to selectively control the stress and strain reactions (Bhagat, 1983) or are aimed at symptom management. These types of coping approaches are generalizable across the non work domain and appeal to people for reasons of health consciousness and the effective use of leisure time. Coping behaviors associated with such strategies include measures both in the biological dimension and in personal dimensions.

Rational/cognitive coping. Rational/cognitive coping includes both problem-focused coping and appraisal focused coping. Problem-focused coping seeks to modify or eliminate the source of stress (obtaining direction and guidance), to deal with the tangible consequences of a problem (taking over responsibility when the subordinate

fails to show up for work), or actively to change the self and develop a more satisfying situation (learning new skills). Appraisal-focused coping involves attempts to define the meaning of a situation such strategies or logical analysis (trying to identify the cause of the problem, attending to one aspect of the situation at a time, mentally rehearsing possible actions and their consequences), cognitive redefinition (accepting the reality of the situation but restructuring it to find something favourable, altering values and priorities in line with changing reality), and cognitive avoidance (denying fear or anxiety under stress, trying to forget the situation, refusing to believe the problem really exists).

Lazarus (1966) suggests that if active problem-focused coping strategies fail then appraisal focussed or rational cognitive coping is induced in order to gain control over the impending stressor. Sells (1970) believes that lack of control over a stressful stimulus is a necessary, if not sufficient condition for stress. It implies that, if personal control of the objective situation is regained in subjective terms by incorporating a potentially threatening event into a cognitive plan, there may be a reduction in experienced stress.

The effectiveness of rational cognitive coping has been studied experimentally. Lazarus, Opton, Nomikos and Rankin

(1965) found that use of denial and intellectualization (talking about the problem) reduced stress as measured by physiological reaction. Holmes and Houston (1974) tested the nature and effectiveness of more specific cognitive strategies for handling stress - redefinition and affective isolation, and found these to be helpful in reducing stress. In Houston's (1973) study, the use of 'denial' was found to be an effective way of coping with threat in stressful situations. He found that in stressful situations subjects who used 'denial' had significantly less physiological arousal, less affective disturbance and significantly better performance than those who did not. Anticipatory cognitive defence mechanisms have also been found to decrease levels of arousal under the condition of uncertainty (Averill, 1973). Pearlin and Schooler (1978) focused on the question of what types of coping responses individuals use to handle marital, parental, financial and occupational strains. They found that the cognitive redefinition strategy was helpful in coping with marital and financial strain, and cognitive avoidance was helpful in coping with a spouse's alcohol abuse. They also reported that such specific rational/cognitive coping responses were not as helpful for reducing strain due to financial and job stressors over which individuals had little direct control. Pelletier (1981) reported a significant negative relationship between rational/

cognitive coping as measured by the Osipow and Spokane (1983) scale, entitled Personal Resources Questionnaire, and various strain measures.

Self Care and Recreation. General measures to improve one's coping ability in the biological dimension include health promotion, e.g., healthy diet, moderate exercise, weight control, etc. In the personal dimension, general stress reducing techniques, include relaxation and recreational activities.

All of these measures are hypothesized as preventive of stress-response disorders and are helpful in strengthening the person's coping ability in a preventive fashion (Caplan, 1974, 1981).

Social Support. Kahn and Antonucci (1980) defined social support as an interpersonal transaction that include one or more of the three key elements: affect (expression of liking, admiration, respect or love); affirmation (expression of agreement or acknowledgement of the appropriateness or rightness of some act or statement of another person); and aid (transactions in which direct aid or assistance is given including things, money, information, time and entitlements). Cobb (1976) has proposed that social support consists of information from others, belonging to one or more of the following three classes: (1) information leads subjects to believe that they are cared for and loved (emotional support); (2) information leading the subject to

believe that they are esteemed and valued (esteem support); and (3) information leading subjects to believe that they belong to a network of communication and mutual obligation.

The growing evidence that the presence of and contact with informal social supports may enable people to cope with stress has generated a large body of work on the adaptational significance of social network resources (Gottlieb, 1981; Mueller, 1980; Turner, 1983). The term social support has been widely used to refer to the mechanisms by which interpersonal relationships are presumed to protect individuals from the deleterious effects of stressors (Kahn & Antonucci, 1980). Social resources may be positively associated with physical and mental health (Heller & Swindle, 1983; Moos & Mitchell, 1982) because they provide emotional support, tangible assistance, and information.

The positive function of social resources is clearly shown in research on the connection between life stressors and adaptation (eg., Brown, Bhrolchain & Harris, 1975; Hirsch, 1980; Nuckolls, Cassel, & Caplan, 1972; Pearlin & Schooler, 1978; Wilcox, 1983). The experience of stress coupled with low levels of social support has been found to be associated with strain (eg., Billings & Moos, 1981; Gore, 1978). Other research has shown that individuals who are in a supportive milieu during life crises are better able to cope with stressful events (eg., Myers, Lindenthal

& Pepper, 1975). People with low levels of social-supports may be the ones who are most adversely affected by life changes (eg., Dean & Lin, 1977; Eaton, 1978).

Henderson (1983) proposed four principal hypotheses about the beneficial effects of social support on depression which can be easily adapted to the context of social support-stress relationship: (1) the absence of social support is one causal factor contributing independently to the onset of depression; (2) the absence of social support is one causal factor contributing to the onset of depression but only in the presence of severe adversity (see also Cassel, 1976, and Harris & Brown, 1978 on the protective effect of a close, confiding relationship); (3) the absence of social support adversely affects the course of symptoms which have already become established; and (4) social support promotes a sense of well being.

Hypothesis (2), the buffering or moderating role of social support, has received much attention in the literature on social support-stress relationships especially by the team at the Institute for Social Research (eg., Caplan et al., 1975; Cobb, 1976). The buffering hypothesis as defined by LaRocco et al. (1980) states that social support interacts with stressors such that the relationship between stress and outcomes is stronger for persons with low levels of social support than for those

with high levels of support. In other words social support moderates the stress-strain relationship. This hypothesis is examined in this study and following James and Brett (1984) and Ganster, Fusilier and Mayes (1986), the terms "buffering" and "moderating" are used interchangeably.

It has been proposed that social support may moderate stress effects through coping strategies (Cohen & McKay, 1984). Social support may increase a person's confidence in a stressful situation and hence correlate with proactive thoughts and actions to take control of the situation. Alternatively, social support may merely provide emotional comfort and thus might be more closely connected with acceptance, cognitive reappraisals and action. In turn, if social support provides emotional comfort, it may well be correlated with a symptom management strategy since many relaxation activities are pursued with friends, family or coworkers.

Findings regarding the buffering role of social support have been inconsistent. Several studies report evidence of the moderating effect of social support on stress-outcome relationships (Gore, 1978; House, McMichael, Wells, Kaplan, & Landerman, 1979; Karasek, Triantis, & Chandry, 1982; Kobasa & Puccetti, 1983; LaRocco et al., 1980; Lefcourt, Martin, & Saleh, 1984; Sandler & Lakey, 1982; Seers, McGee, Serey, & Graen, 1983; Wilcox, 1981). Many of these investigators, however, did not find consistent effects

across different stressors and indices of stress, sources of support and personal characteristics of the subjects. For example, LaRocco et al. (1980) reported that social support moderated the effects of stressors on health outcomes but found no evidence of this effect on job-related strains. Kobasa and Puccetti (1983) reported that support from the boss buffered the effect of critical events on disease symptoms but that support from the family did not. Other investigators have not found support for the buffering hypothesis and still others have noted buffering effects opposite to the hypothesis, i.e., social support appeared to exacerbate the effects of stressors on strain in their studies (e.g., Beehr, 1976; Blau, 1981; Turner, 1981). The discrepancy in results may be accounted for by methodological shortcomings as the recent review of social support literature have suggested (eg., Gore, 1981; House, 1981; Thoits, 1982). For example, various operationalization of stress and of social support, the non-equivalence of the measures used in the research, the lack of differentiation among sources of support, and the confusion about the direct or buffering effects of social support have contributed to the lack of consistency and precision in social support research.

The role of social support in the work environment has been suggested as one of the important factors in determining stress-strain relationship. Caplan (1974)

noted that support systems may aid members in mobilizing their psychological resources, in mastering strain, in sharing tasks and in obtaining information and developing skills. Several studies have shown the benefits of social support for psychological and physical health in the face of occupational stress (House, 1981; House & Wells, 1978; LaRocco & Jones, 1978). Researchers investigating the workplace have recognized social support and the closely related concepts of interpersonal warmth, trust, and openness as core dimensions of organizational climate that may affect many organizational outcomes including job satisfaction and performance (Goldhaber, Yates, Porter, & Lesnick, 1978; Hellreigel & Slocum, 1974; Schnake, 1983).

Most people perceive their social networks to be a major source of help (Lieberman, 1982), and turn to professional sources only when assistance is not available within the network (Kasl, Gore, & Cobb, 1975). Family members, friends, neighbours, supervisors, and co-workers are the predominant sources of support. Research on job stress and social support has differentiated social support by source - co-workers or supervisors - and found that supervisory support is especially relevant to the stress-alleviating effects of social support (Cohen & Wills, 1985; Kasl & Wells, 1985).

Research suggests that there is an enhanced significance to social interactions with supervisors

compared with co-workers (Beehr, 1976; House & Wells, 1978; Karasek et al., 1982). Kirmeyer and Lin (1987) reported that employees make relatively greater use of their supervisors than of their peers as a source of information and propose that such interactions with superiors may contribute in an important way to social support at work. Repetti (1987) reported that relations with supervisors were shown to have the strongest impact on the psychological well-being of the employee. He proposed that workers feel more emotionally vulnerable in role relationships with supervisors because they are less able to influence and change those interactions and because they worried about job evaluations. In Repetti's (1987) study supervisory support was found to be more salient in an unsatisfying work climate, i.e. supervisory support had a buffering effect on the negative psychological consequences of social climate. Quinn and Shepard (1974) examined the relationship between job stress and escapist drinking (ie., drinking in order to avoid the stress and strain at the work place) in a national sample survey of employed men and women. He reported that for those who had adequate social support from their supervisors there was no relationship between job stress and escapist drinking, but for those with inadequate supervisory support, higher levels of job stress were associated with higher levels of escapist drinking. In a study of teachers, Russell, Altmaier and

Van Velzen (1987) reported supervisory support as buffering the relationship between job stress and emotional exhaustion. As the level of supervisory support increased, the strength of the relation between stress and feelings of exhaustion and depersonalization decreased. The presence of supervisory support was also associated with more positive attitudes towards students and with greater personal accomplishment. Studies of other occupational groups such as nurses (Constable & Russell, 1986) and factory workers (House, 1981) have also found that supervisory support has positive effects on the physical and mental health of workers.

One issue identified in the literature on conceptualizing and measuring social support has been whether to treat social support as a set of discrete events that have occurred (i.e., the receipt or use of support) or as a perception that support exists (Wethington & Kessler, 1986). Jayaratne, Himle, and Chess (1988) examined the differential effects of support use and perception of support and found a strong positive correlation ($r = .73$) between perception and use, implying that those who perceive higher level of support are more likely to report using social support than those who perceive a lower level of support. In the work context, the zero order correlations between the use and perception of support for co-workers was reported to be $r = .66$ and

for supervisors as $r = .73$. This is consistent with Heller and Swindle's (1983) hypothesized model which argues that the perceived availability of support is related to an individual's decision to seek support.

This study examined multiple sources of social support. A general index of social support was arrived at through respondents' perception of their social networks as including individuals in whom they can confide, rely, etc. Supervisory and co-worker support were measured by asking respondents to indicate the extent to which each was helpful in specific job related dimensions. A comparison of these sources in terms of degree was carried out and their buffering role in job and non-job stress-strain was examined.

Strain

The negative consequences of stress for the person and the employing organization can be considered as the *raison d'être* for stress research and for stress management approaches. The prevalent practice in stress research has been to classify, somewhat arbitrarily, the effect of stress as strain (relatively minor side effect) or as disease (Holt, 1982). Many researchers have attempted to explain the relationship between stress and strain and between strain and illness (eg., Caplan & Jones, 1975; Nixon, 1976). Nixon (1976) devised a "Human Function Curve" based on the assumption that the individual

subjected to persistent negative stressors passes through fatigue, exhaustion to illness. A stress-causes-strain-causes-illness type of relationship has been generally accepted, although, attempts to look for such effects between work stress and strain and strain and illness have not provided much support (Caplan, 1972; Holt, 1982). A great variety of pathologies have been said to be caused and exacerbated by occupational stress: cardiovascular diseases, mental illnesses of various kinds (including suicide), asthma and other respiratory illnesses such as bronchitis, thyroid disorders, skin diseases, arthritis of various types, tuberculosis, migraine, peptic ulcers, ulcerative colitis and diabetes (Cooper & Marshall, 1976; Selye, 1976). However, backing up such medical opinions or beliefs by hard evidence is difficult. Caplan (1972) called for a consideration of "second order things: the person-environment fit and non-linear interactions" (p. 28). According to the model proposed here, the predicted relation between occupational stress and strain is based on the assumption that chronic stress will produce deviations from a person's usual responses (Beehr & Newman, 1978; Blau, 1981). These job strains are, in turn, proposed to affect various measures of health and illness, e.g., diseases of adaptation, such as coronary heart disease, peptic ulcers, etc. Stress situations are hypothesized to trigger negative thoughts and feelings associated with

various self aspects which in turn contribute to negative affect, low self appraisal, and other reactions including physiological responses (Magnusson, 1981). These may ultimately influence physical health outcomes through neuroendocrine or immune system function, maladaptive health-related behavior and failure to seek help (Jemmott & Locke, 1984; Krantz, Grunberg, & Baum, 1985).

Psychological processes, in the form of attribution of expected harm to a situation are seen as preceding physiological stress reactions in this approach. Strain can also be reflected in interpersonal/behavioral arena (eg., anger, irritability towards others) and in the vocational area, ie., work related attitudes, productivity, attendance and satisfaction.

Holt (1982) has stated that although there is evidence of poor general organismic functioning as a result of job stress, specific organic diseases have not been shown to be related to stress. Depression is one psychodiagnostic category for which replicated results have been reported in epidemiological studies. In one such study (Ilfeld, 1977), job stress was found to be associated with depression for married men. A high proportion of the people who seek medical help do so for what seems to be poor general organismic functioning, e.g., "being bothered by all sorts of ailments, feeling weak all over, having undefined pains, lacking energy, feeling tense and nervous, feeling

depressed, drowsiness, nervous stomach, having personal worries, feeling blue and having headaches" (Mechanic, 1974), and not for specific organic diseases. Yet most research has concentrated on the latter, looking at patients with the above symptoms as a nuisance and suspecting them of hypochondria or malingering (Holt, 1982). Poor general organismic functioning is itself a form of pathology worthy of study. Although there is a dearth of information on days lost from work because of unclassifiable illness, Hinkle (1974) suggested that the number of days lost may be high and that the phenomenon should be investigated.

The existence of emotional outcomes, in response to the experience of stressful life events, has already been noted in the life events literature. A large number of empirical studies (Dohrenwend & Dohrenwend, 1974; Gunderson & Rahe, 1974; Kobasa, 1979; Paykel, 1974) have provided strong evidence that stressful life events precipitate somatic and psychological diseases. Paykel (1974), for example, showed that the recent life histories of hospitalized persons contained significantly more frequent and serious stressful events than did the histories of matched controls drawn from the general population. Life stress has also been found to be predictive of sudden cardiac death (Rahe & Lind, 1971), myocardial infarction (Edwards, 1971; Theorell & Rahe, 1971), menstrual discomfort, pregnancy and birth

related complications (Gorsuch & Key, 1974; Siegel, Johnson, & Sarason, 1979) as well as other major health problems and a variety of minor physical conditions (Rabkin & Struening, 1976). In addition to its relationship to physical illness, life stress has been found to be positively correlated with various indices of psychiatric disorders, anxiety, and depressed mood (Dekker & Webb, 1974; Paykel, 1974; Vinokur & Selzer, 1975).

Early studies reported deleterious effects of a wide variety of stressors on speed and accuracy in tracking, signal detection, verbal reasoning, sentence formation and other kinds of verbal performance (e.g., Lazarus, Deese, & Osler, 1952; Wilkinson, 1969). More recent research has been guided by propositions about the adaptive demands of stress (Glass & Singer, 1972). Cohen's (1980) review of several studies concluded that stressors can create conditions of information overload because they force people to pay special attention, resulting in cognitive fatigue and decreased energy for task performance. These studies showed that after experiencing stressors such as noise, bureaucratic frustration, and task load, people perform less effectively on tasks which call for tolerance, accuracy and perceptual concentration. People also show a decrease in helping, a decrease in the recognition of individual differences and an increase in aggression.

Kahn and French (1970) stated that the effect of stress

on performance is but one narrow segment of the potential effect of stress and of its concomitant behaviour in organizational settings. Role based stressors have an impact on the continuing pattern of interpersonal relations and on the psychological and physical well-being of the worker as well as on his or her role performance (McGrath, 1976). The results of role based stressors such as conflict, ambiguity, overload/underload have been found to be related to individual tension, somatic symptoms, anxiety, depressed mood, low self esteem, and dissatisfaction (Jick & Payne, 1980; Ivancevich & Matteson, 1980). Certain aspects of the physical work environment (eg., noise, crowding, exposure to radiation, etc.) have been linked to irritation, tension, fatigue and impaired efficiency (Cohen, 1980; Glass & Singer, 1972; Holt, 1982).

Evidence for the existence of cognitive outcomes (eg., loss of interest in job) is found in Korman and Lang's (1978) work on the career success and personal failure syndrome. They report such effects in executives undergoing stressful life events such as divorce and separation. In a similar vein, Bartholme (1972) reports that during times of severe personal crisis, young executives and their wives reveal feelings of personal life strains, a loss of personal alertness in their respective careers as well as in their respective work organizations. Harris (1972) reported negative correlations between life

events stress and academic performance, while Carranza (1972) reported negative relationships between life stress and teaching effectiveness. Reports of mid-life crises (Figler, 1978) also indicate the existence of desires for the rearticulation of life perspectives, purpose, and career prospects.

Finally, it has been argued that behavioural outcomes (such as alcoholism, smoking) exist in response to stressful life events (Margolis, Kroes, & Quinn, 1974; Theorell & Rahe, 1974).

This study employed strain as one of the stress outcome variables. The relationship between different categories of stressors and strain was examined. Four different dimensions of strain examined were physical strain (general state of health), psychological strain (well being in terms of psychological health), interpersonal strain (experienced in relationships) and vocational strain (problems in work quality, output and attitude toward work).

Organizational Consequences

During the past decade, organizational behavior research has sought to clarify certain employee-organization linkages (Mowday, Porter, & Steers, 1982; Porter & Steers, 1973; Steers & Mowday, 1981). It is generally assumed by such researchers that (a) outcomes generally valued by the employee, such as satisfaction with work, will benefit the organization through increased

effectiveness and cooperation; and (b) negative outcomes, such as job strain and alienation will result in increased withdrawal behaviors and could lead to a reduction in the effectiveness of the organization. Recently, organizational researchers have focussed on stress related factors within the organization as possible predictors of both positive and negative consequences of organizational effectiveness. Organizational effectiveness has been defined in many different ways. Earlier organizational theories talked about "profit maximization", "providing an efficient service", "high productivity", and "good employee morale" as being the sufficient criteria of effectiveness. Several factors have undermined these as viable criteria. According to Schein (1965), seemingly rational organizations may behave ineffectively when assessed against their own criteria of effectiveness. Moreover, organizations ordinarily fulfill multiple roles. One attempted resolution to these dilemmas has been to define effectiveness in terms of systems-level criteria in which a system's effectiveness is defined as its capacity to survive, adapt, maintain itself, and grow, regardless of its particular function. According to this general criteria of organizational effectiveness, there are certain coping processes which appear to be necessary in a rapidly changing environment if effectiveness is to be maintained or increased. Schein (1965) asserts that some internal

organizational conditions must be present for effective coping to occur, for example the ability to take in and communicate information reliably and validly; internal flexibility and creativity; integration and commitment to the organization's goals and internal climate of support and freedom. These are the same conditions which, in combination with employee needs and values, are associated with employee stress.

A negative relationship between job stress and job performance is hypothesized as persistent job stress is viewed essentially as dysfunctional for the organization and its members (Buck, 1972; Sales, 1976). Job stress, by its very nature is aversive to most employees as it creates a noxious situation in the work environment. In many cases, the presence of stress may lead to many undesirable work activities, such as politicking, goofing off and sabotage and to various forms of withdrawal from work (Steers, 1981. A number of studies have shown a negative relationship between various facets of job stress and variables related to job performance (Beehr, Walsh & Taber, 1976; House & Rizzo, 1975; Jamal, 1984). Two of the organizational variables investigated in this study were job satisfaction and organizational commitment.

Other outcome variables considered for inclusion in this study were productivity, performance ratings, absenteeism and turnover. Given the lack of objective and standardized

productivity measures, systemic problems with the performance evaluation system and absenteeism data and a very low rate of turnover in the sampled organization, the decision was made to use job satisfaction and organizational commitment, the two variables that have important consequences for the organization.

Job Satisfaction. Job satisfaction has been defined by Locke (1969) as a pleasurable or positive emotional state resulting from the appraisal of one's job. According to Smith, Kendall and Hulin (1969) these feelings are associated with a perceived difference between what is expected as a fair and reasonable return, or what is aspired to and what is experienced, in relation to the alternatives available in a given situation. The relationship of these feelings to behavior depends upon the way in which the individual expects that form of behavior to achieve the goal he or she has accepted.

Factors associated with job satisfaction include characteristics of the job itself and the individual differences in terms of expectations and values about work. The work attributes that have been identified in the empirical literature as related to job satisfaction include opportunity to use one's skills, opportunity for new learning, creativity, variety and challenge, responsibility for and control over work methods and work pace, and pressure for performance. Individual differences in job satisfaction include the extent

to which an individual values and seeks out mentally challenging work, values rewards associated with the job (the issue of justice or fairness in rewards), the frequency of promotion in relation to what is desired and the importance to the individual of promotion, verbal recognition and general working conditions (Locke, 1969).

Job satisfaction as an outcome measure is important because of its relationship both with satisfaction in other areas of life experiences and general life satisfaction (Andrews & Withey, 1974). The relationship between job satisfaction and life satisfaction has been found to be consistently positive, although the correlations have been relatively low (ranging from $r = .27$ to $r = .47$). Many have suggested (Keon & McDonald, 1982) on the basis of such relationships that job satisfaction is a component of life satisfaction or that job satisfaction causes life satisfaction (Orpen, 1978; Rice, Near & Hunt, 1979). Kean and McDonald (1982) have questioned this unidirectional relationship and proposed a model suggesting that job satisfaction and life satisfaction are jointly determined. The level of job satisfaction influences the observed level of life satisfaction and vice versa.

Job satisfaction has also been examined for its impact on health variables. Sales and House (1971) reported a strong relationship between job satisfaction and the rates of mortality from arteriosclerotic heart disease, this relationship being the strongest for white collage workers. Palmore (1969) reported, as a result of a longitudinal

study, that job satisfaction was the single overall best predictor of longevity.

Studies using job satisfaction as an outcome variable have consistently reported the existence of negative relationship between job stressors and job satisfaction. For example, the strong negative association between role conflict and job satisfaction has been well documented for a variety of occupational groups (for example, Beehr et al., 1976; Brief & Aldag, 1976; Brief, Aldag, Van Sell, & Melone, 1979; Tosi & Tosi, 1970). Role ambiguity has been shown to be negatively associated with job satisfaction (Hamner & Tosi, 1974; Rizzo, House, & Lirtzman, 1970). Skill utilization has been found to be a strong predictor of job satisfaction in a large study (O'Brien, 1982; O'Brien, Dowling & Kabanoff, 1978). Sales (1970) in a laboratory experiment, reported a significant negative relationship between the subjects' enjoyment of the task and changes in their serum cholesterol during the work period and suggested that job satisfaction may moderate the effects of job stressors on coronary risk indicators.

In this study, the relationship of different stressors in the work environment (both of on-going nature and changes (events at work) during the preceding year) was examined with job satisfaction. Also of interest to this researcher is the relationship of non-job stressors to job satisfaction. The main hypothesis however, deals with the

moderating role of psychosocial variables (coping, social support in general, supervisory social support) and was examined for job stress-job satisfaction relationship.

Organizational Commitment. In recent years in North America, considerable attention has been devoted to understanding Japanese management practices in the hope that this understanding could be used to improve organizational performance (Drucker, 1981). One of the basic tenets of the Japanese management system in medium and large-size organizations is said to be the principle of "life-time" employment (Ouchi, 1981) which supposedly leads to a high degree of organizational commitment among Japanese employees. Mowday, Steers, and Porter (1979) define organizational commitment as "the nature of an individual's relationship to an organization. A highly committed person will indicate a strong desire to remain a member of a particular organization, a willingness to exert high levels of effort on behalf of the organization, and a definite belief in, and acceptance of, the values and goals of the organization" (p. 224). Organizational commitment, thus, represents an active relationship with the organization in which individuals are willing to give something of themselves in order to help the organization succeed and prosper (Mowday et al., 1979).

Organizational commitment differs from the concept of job satisfaction in several ways. Commitment as a

construct is more global, reflecting a general affective response with respect to the organization as a whole. Job satisfaction, on the other hand, reflects one's responsibility either to one's job or to certain aspects of one's job. Thus commitment emphasizes attachment to the employing organization, including its goals and values while job satisfaction emphasizes the specific environment in which an employee performs his or her duties (Mowday et al., 1979). Organizational commitment is also considered somewhat more stable over time than is job satisfaction, for although day-to-day events in the work place may affect an employee's feelings towards the job, such transitory events may not cause an employee to seriously re-evaluate his or her attachment to the overall organization (Porter, Steers, Mowday, & Boulian, 1974). Evidence for the transitory nature of satisfaction can be found in Smith et al. (1969) and Porter et al. (1974).

One of the consequences of job stress is the reduced commitment on the part of the worker to the employing organization (Beehr & Newman, 1978; Bhagat et al., 1985; Morris & Sherman, 1981). In a meta-analysis of the correlates of role stress, Fisher and Gitelson (1983) found consistent negative relationships between role stress and organizational commitment. Organizational commitment has been shown to influence productivity, absenteeism and turnover in organizations (Meyer & Allen, 1984; Mowday et al., 1982).

2

MICROD

Hypotheses and Predictions

This field study was designed to explore a number of aspects of occupational stress in a large public sector organization. The main thesis, however, was concerned with the moderating role of subjects' psychosocial resources (individual characteristics, coping strategies, degree of perceived social support) with respect to the stressor-strain relationship. The following hypotheses were examined.

1. A strong positive relationship was predicted between work stressor scores and strain; a negative relationship was predicted between work stressors and such organizational outcomes as organizational commitment and job satisfaction.

2. It was predicted that non-work stress should be significantly positively correlated with strain measures and that this relationship should be stronger for personal outcomes than for organizational outcomes.

3. Total life stress (work + non-work) should be a better predictor of strain than either work stress or non-work stress considered separately.

4. Chronic stress should be a better predictor of strain than acute stress for both work and non-work domain. It was also suggested that negative stress should have stronger relationship than positive stress with

various outcome variables for both work and non-work stress.

5. Coping should moderate the relation between job stressors and strain. It was hypothesized that reported coping levels should interact with job stressors (as measured by the impact of job related events and frequency of ongoing job stressors) in predicting strain and organizational outcome variables of job satisfaction and organizational commitment. Subjects whose reported level of coping is high should show a weaker relationship between job stressors and strain and between job stressors and organizational outcome variables than those who report low levels of coping.

6. Coping should moderate the effects of non-work stressors (as measured by the impact of life events and daily hassles) and reported strain levels. For subjects with high levels of coping, a weaker relationship between stress and strain scores was predicted than for those with low coping levels.

7. Perceived social support, as reported by subjects, should moderate the relationship between stressors and strain. Subjects with high support level should show a weaker relationship between stressors and strain than those with low support. This prediction should hold for work stress, non-work stress and for the total stress level.

8. Supervisory support should be positively correlated

with the outcome variables of organizational commitment and job satisfaction, ie., the higher the level of supervisory support, the higher the organizational commitment and job satisfaction scores. Differences between supervisory and coworker support were examined for job satisfaction.

9. Positive correlations between self esteem and coping variables and negative correlations between self-esteem and stress and self-esteem and strain were expected.

The following relationships will also be explored; no predictions are made at this point:

- Type A Behavior Pattern, stress, strain and coping.
- Various subscales of job stress with different types of strain as well as with job satisfaction and organizational commitment.
- Employee characteristics of age, sex, tenure, occupation type and various measures of strain, organizational outcomes, coping and stressors.

Method

Subjects

A large Federal Government department, Canada Employment and Immigration Commission, served as the source of the subjects used in this study. The subjects were drawn from a sub-sample of the three occupational categories typically found in large organizations [Support staff (secretarial and clerical jobs), Officers (program and project officers, and technical specialists), and

Supervisory/Managerial staff] who attended stress-management seminars. In the Department, the breakdown for Support, Officer and Supervisory/Managerial categories is 51%, 38%, and 10% respectively. The subjects were drawn from a sub-sample who participated in stress management seminars where the breakdown was 36%, 53% and 11% respectively. For the study sample, an attempt was made to have more homogeneous representation by occupational category so that valid intergroup comparisons could be made. The breakdown for the occupational category for this study was 33%, 36% and 31% for Support, Officer and Supervisors/Managers.

In the government department, the ratio of males to females was 1:2. In the sub-sample attending the seminars, the ratio of males to females was 23:27. Although there were many levels of supervisory and managerial positions, these were combined in one group for analysis purposes for comparison with the non-supervisory staff (Support and Officers). The sample was approximately normally distributed for age, with a mean age of 37 years and a range of 21 to 63 years. Similarly, the length of service with the organization (tenure) was normally distributed, with a mean age of 11 years and a range of 1 to 32 years.

Because of the selection specifications for positions in the Federal Government, all potential participants in this study were deemed to have graduated from secondary

school as a minimum. Samples of statements of qualifications for the three occupational categories are included in Appendices A, B and C.

Due to the nature of the variables used in this study, a large sample was needed. A total of 375 subjects were given questionnaires, out of which 349 questionnaires were returned and were available for analysis.

Procedures

The subject sample consisted of groups of participants in Stress Management training seminars. These seminars are offered by the Human Resource Management professionals both as a regular component of other training programs (Supervisory Training, Intermediate Management Training) and by special request from different areas in the organization. Complete confidentiality of all responses to the assessment questionnaires was emphasized in both the written introduction to the questionnaires (Appendix D) and in the verbal instructions given during the session. Individuals were also informed that participation was voluntary and that they were free to leave the classroom while others were completing the questionnaires.

The stress management seminars were offered in two parts. In the first part, participants discussed and assessed their respective levels of stress. It was during this period that the questionnaires dealing with the measurement of stressors (Appendices E-H) were completed.

In the second portion of the seminar, the discussion and activities centred on coping and on the management of stress. At this time, participants were asked to complete the questionnaires designed to measure strain, job satisfaction, organizational commitment, Type A Behaviour Pattern, Self Esteem at Work and Coping (Appendices J-P). Detailed information and feedback was available to participants on an individual basis a few days after the seminar. The form of this feedback was either in a counselling session or in written form.

Measures

All of the measures employed in this study and described below were self reports of perceptions of measuring stressors, strains and coping variables as recorded on questionnaires.

Predictor Variables

Job stressors. The nature and frequency of stressors on the job was measured using the Occupational Environment Scales, Form E2 (Appendix E: Osipow & Spokane, 1983). This instrument consists of 60 Likert-type items with five response categories labelled most of the time, usually, often, occasionally and rarely or never. In scoring the responses to the 60 items, it is possible to obtain scores on each of six commonly accepted dimensions of job-related stress: a) role overload, b) role ambiguity, c) role conflict, d) role boundary, e) role insufficiency as well

as the f) physical work environment.

This instrument was chosen because of its relevance and comprehensiveness and its psychometric properties - internal consistency for the total scale (Cronbach α = .89) and for the various subscales (α = .71 to .90), two week test-retest reliability (r = .90), discriminant and predictive validity (Osipow & Spokane, 1983).

Another measure of work stress used was the job related events which each participant reported as having occurred during the preceding year. This type of stress was assessed using Work Experience Survey (Appendix F: Sarason, Johnson & Siegel, 1978). The psychometric properties of LES are described in the following paragraph. A total of thirty one related items were used.

Non-job stress. To measure non-job stress of an ongoing nature, the Hassles Scale (Appendix G: Kanner et al., 1981) was used. This scale is designed to assess the number and severity of daily stressors (e.g., misplacing or losing things, financial security). There are a total of 100 hassles typically experienced by people. Provision was made for the addition of three more. Severity is assessed on a three point scale (1 = somewhat severe, 2 = moderately severe, and 3 = extremely severe).

Life events stress were assessed by the Life Experiences Survey (LES, Appendix H: Sarason, Johnson & Siegel, 1978). This self-report instrument allows subjects

to indicate the incidence of various important life change events (e.g., death of a family member, leaving home for the first time) experienced during the past year. Subjects can also indicate the occurrence of significant events that do not appear in the LES list. In addition, although the LES contains a supplement of 10 events they are more relevant to a university student population, and consequently were not used. Respondents are expected to rate the perceived stressful impact of each event on a seven-point scale ranging from extremely negative (-3) to extremely positive (+3). Separate scores can thus be computed for negative, positive and total (positive + negative) life stress impact. Previous research has indicated that positive life events are uncorrelated with distress, symptomatology (Nezu et al., 1986; Sarason et al., 1978). Reliability estimates for the negative stress scale range between .56 and .88 (Nezu, Nezu & Blissett, 1988). In this study, the total impact (positive + negative) as well as separate positive and negative impact scores were used. The LES has demonstrated substantial construct validity (Christensen, 1981).

The Criterion Variables

Personal strain. Strain, as perceived and reported by respondents, was assessed using "Personal Strain Questionnaire" - Form E2 (Appendix J), containing 40 Likert-type items (Osipow & Spokane, 1983). Strain is measured in terms of frequency of the symptoms on a 5-point scale

ranging from "most of the time" (5) to "rarely or never" (1). The items are arranged into four subscales of 10 items each -- vocational strain, psychological strain, interpersonal strain and physical strain. Internal consistency for the total scale has been reported to be $\alpha = .94$ (Cronbach's Alpha) while for the four subscales it varies from $\alpha = .71$ to $\alpha = .89$. The questionnaire's two test-retest reliability, over a two-week period, is reported to be $r = .94$.

Job satisfaction. Job satisfaction was assessed using the Facet-Free Satisfaction Questionnaire (Appendix N: Quinn & Staines, 1975). This questionnaire contains five questions with 3-5 response choices on which a score ranging from one to five could be obtained. The scores for the five questions are summed and divided by the number of questions (5). A Cronbach's Alpha of $\alpha = .77$ is reported for this measure.

Organizational commitment. Organizational commitment was assessed using the scale developed by Mowday, Steers, and Porter (1982), called the Organizational Commitment Questionnaire (Appendix O). This scale has 15 Likert-type items with five response categories placed along the continuum from "strongly agree" to "strongly disagree". Since six of the items are negatively phrased, they are score in reverse. The scores for all items are summed and divided by 15 to get a respondent's Organizational

Commitment Score. The higher the score the more organizationally committed an individual is judged to be. This scale has been widely used, and has reasonable psychometric properties including high internal consistency, reliability, some evidence for convergent, discriminant and predictive validity (Angle & Perry, 1981; Mowday et al., 1979).

Moderator Variables

Coping strategies. The frequency of use of various coping strategies will be assessed through the Personal Resources Questionnaire - Form E2 (Osipow & Spokane, 1983). This questionnaire (Appendix P) is divided into four subscales of 10 items each and assess self care, recreation, rational/cognitive coping and social support. The respondent is expected to indicate, on a 5-point scale, the extent to which he or she uses of various strategies by placing a check mark along the continuum from "rarely or never" to "most of the time". The psychometric properties for this measure are reported as internal consistency for the total scale ($\alpha = .88$ - Cronbach's Alpha), $\alpha = .71$ to $\alpha = .83$ for different subscales, and a two week test-retest reliability of $r = .88$ for the total scale.

Social support at work. A measure developed by House (1981) that yields an index of social support from four sources: supervisors, co-workers, spouses and friends or relatives, was used (Appendix M). Although respondents

were asked to rate how helpful each of these persons was in the context of work-related stress, only the data for the supervisor and co-worker support was used in this study.

Alpha coefficients ranging from $\alpha = .75$ to $\alpha = .92$ have been reported (House, 1981) and validity evidence has been provided by a number of studies conducted at the University of Michigan's Institute for Social Research. Social support (particularly that derived from supervisors and co-workers) has been consistently found to be predictive of measures of physical and mental health for a variety of occupations (House, 1981).

Self-esteem. Work-related self-esteem was measured using a semantic differential scale (Appendix L: Rosenberg, 1965). The respondents were asked the question "How do you see yourself at work?" and were expected to respond by choosing one of the following options: are successful - not successful, important - not important, sad - happy, doing my best - not doing my best.

Type A behavior pattern. The degree of Type A Behavior pattern was measured using a 5-item version developed by House (1981). Respondents were asked to indicate on a 7 - point scale, anchored at one end by "not at all true of me" and at the other by "very true of me" how true each of the five statements was for them.

Results

Descriptive Statistics

Demographic characteristics pertinent to the sample are presented in Table 1. As can be seen therein the proportion of males to females is 46:54 respectively. The age of the subjects which ranged in age from 21-63. The three occupational categories -- Support (clerical and secretarial) staff, Officers (administrative officers, program officers) and Supervisory/Managerial staff were roughly equally represented in the sample (33%, 35.8% and 31.2% respectively). The average length of employment with the organization from which this sample was drawn ranged from 1 to 32 years with an average of 11 years.

Exploratory Analyses

A correlational research design was used to examine the relationships among several of the correlates of stress. Based on the theoretical rationale outlined in the body of the text, these variables were categorized as predictors, moderators and criterion (outcome) variables. Before conducting the principal analyses, correlations among the different set of variables were computed and examined. The zero order correlations are presented in Table 2. Means and standard deviations for all variables used in this study are shown in Appendix Q.

Since this study involved stressors from both work and non-work sources and the outcome variables of both personal

Table 1

Demographic Characteristics of Sample

Sex	Males	= 162 (46.4%)
	Females	= 187 (53.6%)
Age	Mean	= 37.4 S.D. = 8.36
	< 30	= 67 (19.2%)
	31-40	= 154 (45%)
	41-50	= 82 (23.5%)
	Over 51	= 44 (12.3%)
Occupational Status		
	Support staff	= 115 (33%)
	Officers	= 125 (35.8%)
	Supervisors/Managers	= 109 (31.2%)
Tenure with the Present Employer		
	Mean	= 10.99 S.D. = 6.63
	< 5 years	= 82 (23.5%)
	5-15 years	= 185 (53%)
	16-25 years	= 67 (19.2%)
	Over 25	= 12 (.3%)

Table 2.

Zero Order Correlations of Predictor and Moderator Variables with Criterion Variables

Predictor and Moderator Variables	Vocational Strain	Psychological Strain	Interpersonal Strain	Physical Strain	Total Strain	Job Satisfaction	Organizational Commitment
Work Stress							
Role Load	.136	.232*	.151	.241*	.252**	-.046	-.082
Role Insufficiency	.554***	.367**	.102	.154	.374***	-.711***	-.379***
Role Ambiguity	.451***	.371***	.159	.206*	.374***	-.341***	-.229*
Role Conflict	.608***	.454***	.156	.310**	.482***	-.596***	-.471***
Responsibility for Others	-.019	.076	.080	.103	.088	.056	.029
Physical Environment	.206*	.234*	.117	.262**	.265**	-.144	-.142
Total Chronic Work Stress	.584***	.507***	.217*	.352***	.535***	-.557***	-.393***
Work Events (Total)	.208*	.181	.193	.187	.245*	-.208*	-.210*
Negative Work Events	.421***	.365***	.208*	.187	.373***	-.437***	-.314**
Positive Work Events	.026	-.008	.073	.080	.125	.311**	.128
Work Events (0-6 months)	.226*	.162	.146	.176	.221*	-.253*	-.254**
Work Events (6-12 months)	.044	.093	.142	.072	.111	.002	.004
Nonwork Stress							
Hassles (Frequency)	.389***	.501***	.398***	.481***	.574***	-.254**	-.064
Hassles (Severity)	.379***	.504***	.390***	.491***	.569***	-.241*	-.079
Nonwork Events	.107	.240*	.346***	.298**	.320**	-.077	.044
Positive Nonwork Events	.026	-.008	.073	.080	.054	-.006	.058
Negative Nonwork Events	.112	.327***	.389***	.339**	.397***	-.113	-.009
Nonwork Events (0-6 months)	.089	.170	.183	.277**	.232*	-.062	-.002
Nonwork Events (6-12 months)	.066	.182	.334***	.147	.232*	-.054	.069
Moderators							
Recreation	-.163	-.355***	-.298**	-.369***	-.396***	.069	-.011
Selfcare	-.228*	-.324***	-.102	-.323***	-.326***	.106	.025
General Support	-.176	-.302**	-.373***	-.233*	-.345***	.174	.116
Rational Cognitive Coping	-.355***	-.396**	-.232*	-.314**	-.422***	.126	-.022
Coping	-.320**	-.476***	-.357***	-.425***	-.513***	.162	-.049
Supervisory Support	-.299**	-.259**	-.069	-.112	-.231*	.343***	.244*
Coworker Support	-.223**	-.179	-.110	-.148	-.218*	.228*	.126
Self Esteem at Work	-.607***	-.454***	-.129	-.212*	-.446***	.549***	.227*
Type A Behavior Pattern	-.106	-.025	.024	-.042	.010	.183	.072

* p < .05

** p < .01

*** p < .001

(strain) and organizational consequence (Job Satisfaction and Organizational Commitment), it was important to examine the independence of these two types of stressor and outcome categories. A Canonical Correlation Analysis (Hotelling, 1936) was performed on predictor and outcomes variables using Program 6M of the Biomedical Data Processing (BMDP) program (Dixon, 1983). This analysis produced five statistical significant canonical variates. These variates are the weighted composites of the variables in each set. As Table 3 shows, the first two canonical variates were both statistically significant ($p < .001$) and are conceptually meaningful. The loadings (Tables 4 and 5) as determined by the correlations between the variables in each set and the canonical variates provided a means for interpreting the variates themselves. The first path of canonical variates (work related stress and work related outcomes) shared 75% of the variance of the first canonical covariate ($R_{c_1} = .8682$) while the second variate (nonwork stress and personal strain) represented 39.4% ($R_{c_2} = .6280$) of the variance between the second canonical pair of canonical variate. The proportions of variance of the X variables extracted by all the canonical variates sum to .65 with the first two canonical variates accounting for 31% (21% + 10%) of the variance. The sum of the proportion of variance of the Y variables is 1.00 with the first and second canonical variates contributing 64% of this variance

Table 3

Canonical Correlation Analysis

	Canonical Variates	
	#1	#2
Canonical Correlation (R_c)	.868	.628
R_c^2	.754	.394
PV_y	43%	22%
Total PV_y		<u>100%</u>
PV_x	21%	10%
Total PV_x		<u>65%</u>
$Rd_y(PV_y \cdot R_c^2)$	32%	8%
Total Rd_y		<u>46%</u>
$Rd_x(PV_x \cdot R_c^2)$	16%	4%
Total Rd_x		<u>23%</u>

*Number of variables in X set = 14; Number of variables in Y set = 8; Number of canonical variates = 8.

Table 4

Canonical Variate Loadings for Predictor (X) Variables

Variable	Loading Coefficients	
	Canonical Variate 1	Canonical Variate 2
Chronic work stress(total)	.783	.078
Negative work events	.593	-.027
Positive work events	-.365	.282
Severity of hassles	.493	.574
Negative nonwork events	.244	.564
Positive nonwork events	-.019	.094
Work related self esteem	-.797	.126
Type A behavior pattern	-.151	.345
Role load	.197	.348
Role insufficiency	.784	-.337
Role ambiguity	.525	-.049
Role conflict	.797	-.161
Responsibility	.004	.383
Physical environment	.290	.216

Table 5

Canonical Variate Loadings for Criterion (Y) Variables

	<u>Loading Coefficients</u>	
	<u>Canonical Variate 1</u>	<u>Canonical Variate 2</u>
Strain (Total)	.769	.591
Vocational strain	.883	-.030
Psychological strain	.745	.495
Interpersonal strain	.339	.609
Physical strain	.468	.673
Job satisfaction	-.837	.303
Organizational commitment	-.463	.321

(43% + 21%). The total redundancy of the Xs given all the linear combination of the Ys is 23%. This means that 23% of the total variance of the Xs is predictable from all the linear combinations of the Ys with the first and second canonical variates of Xs representing 20% of the variance (16% + 4%). The total variance of the Ys predictable from all the linear combinations of the Xs is 46% with the first and second canonical variates of the Xs representing 40% (32% + 8%) of this variance.

A Principal Components Analysis with varimax rotation was performed using the BMDP program 4M on the set of 41 variables to which 243 subjects had responded ($N = 243$). The responded intervariable correlation matrix is presented at Appendix R. Ten factors were extracted through this analysis, using the criteria of Gamma > 1 (sum of squared loadings 2), after orthogonal rotation. Sorted and ordered (within factors) the loadings of variables on each factor, the sum of squared loadings, the communalities of variables and the proportion of variance and covariances explained by each factor is presented in Table 6. Furthermore, unrotated factor loadings are presented in Appendix S, while the sorted rotated factor loadings are shown in Appendix T.

As can be seen from Table 6, all ten factors are distinguishable and are well defined by the variables that load on them. The ten factors explain 70.5% of the variance and as was done in Table 7, can be labelled to reflect the

Table 6

Principal Component Analysis

Variable	Extracted Factors and Rotated Loadings										Commonalities
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	
Role Conflict	.813	-	-	-	-	-	-	-	-	-	.7306
Insufficiency	.793	-	-	-	-	-	-	-	-	-	.7186
Job Satisfaction	-.793	-	-	-	-	-	-	-	-	-	.6938
Stress Total	.775	-	-	-	-	.471	-	-	-	-	.9255
Vocational Strain	.701	-	.425	-	-	-	-	-	-	-	.7222
Self Esteem at Work	.635	-	-	-	-	-	-	-	-	-	.6177
Role Ambiguity	.612	-	-	-	-	-	-	-	-	-	.5786
Supervisory Support	.574	-	-	-	-	-	-	-	-	-	.5411
Organizational Commitment	.541	-	-	-	-	-	-	-	-	-	.5185
Alienation (Work)	.538	-	-	-	-	-	-	-	-	-	.4940
Negative Work Events	-	.857	-	-	-	-	-	-	-	-	.8255
Nonwork Events (Total)	-	.741	-	-	-	-	.519	-	-	-	.9485
Severity of Hassles	-	.677	-	-	-	-	-	-	-	-	.7481
Frequency of Hassles	-	.656	-	-	-	-	-	-	-	-	.7180
Strain	-	-	.801	-	-	-	-	-	-	-	.9597
Physical Strain	-	-	.762	-	-	-	-	-	-	-	.7645
Psychological Strain	.427	-	.668	-	-	-	-	-	-	-	.7732
Interpersonal Strain	-	-	.649	-	-	-	-	-	-	-	.6538
Coping	-	-	-	.873	-	-	-	-	-	-	.9506
Selfcare	-	-	-	.790	-	-	-	-	-	-	.6750
Recreation	-	-	-	.715	-	-	-	-	-	-	.6014
Rational/Cognitive	-	-	-	.648	-	-	-	-	-	-	.6010
Work Events	-	-	-	-	.905	-	-	-	-	-	.9820
Work Events (0-6mon)	-	-	-	-	.851	-	-	-	-	-	.8230
Neg. Work Events	.464	-	-	-	.700	-	-	-	-	-	.8281
Pos. Work Events	-.471	-	-	-	.458	-	.404	-	-	-	.6961
Responsibility for Others	-	-	-	-	-	.768	-	-	-	-	.6433
Role Load	-	-	-	-	-	.743	-	-	-	-	.6698
TABP	-	-	-	-	-	.711	-	-	-	-	.6153
Occupation	-	-	-	-	-	.525	-	.467	-	-	.6932
Positive Nonwork Events	-	-	-	-	-	-	.824	-	-	-	.7971
Nonwork Events (0-6 months)	-	.571	-	-	-	-	.683	-	-	-	.8248
Physical Environ.	-	-	-	-	-	-	.448	-	-	-	.4651
Tenure	-	-	-	-	-	-	-	.808	-	-	.6934
Age	-	-	-	-	-	-	-	.787	-	-	.7048
Sex	-	-	-	-	-	-	-	.524	-	-	.5066
Nonwork Support	-	-	-	-	-	-	-	-	.762	-	.6533
Social Support General	-	-	-	.412	-	-	-	-	.701	-	.4040
Coworker Support	-	-	-	-	-	-	-	-	.535	-	.7464
Work Events (6-12 months)	-	-	-	-	-	-	-	-	-	.615	.6071
Nonwork Events (6-12 months)	-	.563	-	-	-	-	-	-	-	.672	.8137
Sum of Squared Loadings	5.906	3.382	3.076	2.845	2.787	2.152	2.039	1.678			$\Sigma h^2 = 289.072$ $h^2 = .657$
Proportion of Variance by Factors (%)	14.40	8.25	7.50	6.94	6.79	5.25	4.97	4.09			Total Variance Explained by Factors: 70.54%
Proportion of Covariance Explained by Factors (%)	20.4	11.7	10.6	9.8	9.6	7.4	7.00	5.8			

Table 7

Summary of Factors Extracted through Principal Components
Analysis

<u>Factor No.</u>	<u>Factor Name</u>	<u>Proportion of variance explained by the factor</u>
1	Work related stress (overall)	14.40%
2	Nonwork stress (overall)	8.25%
3	Strain	7.91%
4	Coping	7.50%
5	Acute work stress (work events)	6.94%
6	Position in organization	6.79%
7	Acute nonwork stress (nonwork events)	5.25%
8	Employee characteristics	4.97%
9	Social support	4.43%
10	Timing of events (work & nonwork)	4.09%
	Total	70.54%

different concepts used in this study.

Only three variables (coworker support, physical environment and alienation) failed to meet the criterion of at least 25% of the variance accounted for by a factor (loading of .50). Physical Environment is a subscale of total chronic stress measure and was therefore retained. Coworker support as a component of support from work sources was included. However, only one set of independent analyses was done using coworker support. Alienation was not used as an outcome variable.

Factor 8 identifies the demographic variables of age, sex and tenure with the employing organizations. Since these variables do not load on any other factor significantly, the remaining nine factors can be taken to be 'pure' factors with respect to these variables. The zero order correlations between the demographic variables with the predictor and criterion variables, presented in Table 8, were found to be non significant, except for two correlations. These variables were, therefore, not used as control variables in any of the main analyses. The intercorrelation matrix of these variables is presented in Table 9. It would appear that these variables are confounded with each other. Given the demographics of the sample, this confounding is to be expected, especially between occupation and sex, between occupation and tenure and between occupation and age. This could account for

Table 8

Correlational matrix for demographic variables with
predictor and criterion measures

Variable	<u>Demographic Variables</u>			
	Age	Sex	Occup.	Tenure
Predictors				
Chronic Stress	-.062	.101	.042	-.053
Positive work events	-.079	-.063	.071	-.065
Negative work events	.106	.005	-.077	.058
Events 0-5 months	-.044	-.068	-.149	-.024
Events 6-12 months	.174	.043	.157	.077
Hassles (frequency)	-.109	-.096	-.069	-.021
Hassles (severity)	-.145	-.161	-.128	-.033
Positive nonwork events	-.182	-.067	-.131	-.136
Negative nonwork events	-.082	-.161	.022	.032
0-6 months	-.117	-.165	-.142	-.047
6-12 months	-.104	-.045	.070	-.048
Criterion variables				
Voc. strain	-.072	.029	-.201*	-.051
Psychological strain	-.092	-.100	-.147	-.078
Interpersonal strain	-.067	-.093	-.129	-.108
Physical strain	-.067	-.230*	-.071	-.042
Job satisfaction	.074	-.034	.158	.055
Organizational commitment	.057	.044	.061	.016

* $p < .05$

Table 9

Intercorrelational matrix of demographic variables

	Age	Sex*	Occupation**	Tenure
Age	1.00			
Sex	.271	1.00		
Occupation	.295	.339	1.00	
Tenure	.549	.225	.247	1.00

* Sex 1 Female

2 Male

** Occupation - 1 Support

2 Office

3 Manager

differences on key variables for subgroups formed on the basis of these demographic variables. These differences between the groups formed with different categories of these demographic variables were examined for the key variables of this study using the BMDP program 3D (Hotelling's T-statistic) and are presented in Tables 10 through 13. The intergroup differences will be interpreted with the discussion of the relevant variables in the following pages.

The measure of chronic nonwork stress (Hassles scale) was provided by the frequency and severity indices. As the correlation between these two measures was high and significant ($r = .953$) only one of these indices was used as a measure of nonwork stress. Kanner et al. (1981) also found extremely high correlations between frequency and cumulated severity of hassles ($r = .095$) and suggested that to avoid redundancy, the use of only one subscale was appropriate. Hassles Severity score was used as the conceptually more meaningful measure. It takes into account respondents' reactions to the hassles they report. For hypotheses dealing with the moderating effect of coping strategies, analyses were performed using both the hassle frequency and hassle severity indices.

For work and nonwork events, many different aspects (positive impact, negative impact, time of happening 0-6

Table 10

Group Differences for Occupations for Stress and Its Correlates

	T-Statistic				Mean	
	Support & Officers	Officers & Managers	Support & Managers	Support	Officer	Manager
Stress	+					
Hassles	-	-	-	138.96	140.99	142.11
Negative Work Events	-	2.31*	2.90**	23.54	22.25	18.50
Negative Nonwork Events	-	3.23**	2.07*	12.18	13.53	9.21
Vocational Strain	-	-	-	6.69	6.92	6.13
Psychological Strain	-	2.66**	2.67**	20.89	20.88	19.04
Interpersonal Strain	-	-	2.21*	24.41	24.17	22.36
Physical Strain	-	-	2.03*	21.07	20.38	19.40
Strain (Total)	-	-	-	21.41	21.02	20.61
Job Satisfaction	-	-	2.40*	88.05	86.23	81.43
Organizational Commitment	-	-2.75**	-3.06**	2.91	2.96	3.38
TABP	2.50*	-3.13**	-	4.03	3.70	4.12
Self-Esteem	-2.03*	-3.03**	-5.10***	14.44	16.04	18.27
Load	-	-3.20**	-3.30***	15.38	15.57	17.16
Insufficiency	-2.30*	-3.08*	-5.18***	23.30	25.30	28.07
Ambiguity	-	4.00*	4.69**	30.26	29.55	25.21
Conflict	-	-	-	22.95	23.62	22.81
Responsibility	-	3.93***	2.30*	23.69	25.36	21.67
Physical Environment	-	-9.64***	-9.91***	20.35	21.17	28.23
Coping	2.87**	-	2.91**	18.09	15.90	15.64
Recreation	-2.18*	-	-	121.33	127.20	123.34
Selfcare	-	-	-	26.02	26.90	26.27
Rational Cognitive	-	-	-	25.47	26.14	25.29
General Social Support	-	-	-	33.80	35.28	34.30
	-	-	-	36.27	38.39	37.42

* p < .05

** p < .01

*** p < .001

+ = Non-significant t-values have been replaced with a (-)

Table 11

Group Differences for Sex on Stress and on Stress
Correlates

Variate	T-Statistic	Means	
		Males	Females
Stress (Chronic-total)	-	142.6	138.9
Hassles	2.50*	19.62	23.14
Negative Work Events	-	11.76	11.73
Negative Nonwork Events	2.88**	5.53	7.50
Vocational Strain	-	20.31	20.31
Psychological Strain	2.14*	22.78	24.48
Interpersonal Strain	2.41*	19.48	21.02
Physical Strain	4.07***	19.42	22.41
Strain (Total)	2.82**	82.02	88.22
Job Satisfaction	-	3.03	3.12
Organizational Commitment	-	3.97	3.88
Type A Behavior Pattern	-	16.27	16.16
Self Esteem	-	15.83	16.12
Load	-	26.15	24.91
Insufficiency	-	28.22	28.69
Ambiguity	-2.01*	23.83	22.55
Conflict	-	24.15	23.28
Responsibility for Others	-2.85**	24.15	22.13
Physical Environment	2.82**	15.60	17.36
Coping	-	125.06	123.17
Recreation	-2.09*	27.18	25.72

Table 11 cont'd.

Variate	T-statistic	Means	
		Males	Females
Self Care	-	25.23	26.03
Rational Cognitive	-	34.82	34.19
General Social Support	-	37.38	37.40

* $p < .05$
** $p < .01$
*** $p < .001$

Table 12

Group Differences for Age

	Means				t-test
	G1 30 or Less	G2 31-40	G3 41-50	G4 50+	
Stress	140.22	143.21	136.54	139.09	G2&G3=2.05*
Hassles	24.16	21.94	19.14	20.11	
Negative Work Events	10.87	12.00	10.22	15.09	
Negative Nonwork Events	7.30	6.70	6.02	5.93	
Vocational Strain	21.14	20.73	19.26	19.35	G1&G3=2.08* G2&G3=2.09*
Psychological Strain	24.70	24.03	22.08	23.70	G1&G3=2.11* G2&G3=2.16*
Physical Strain	21.34	21.41	20.62	19.70	
Interpersonal Strain	21.35	20.26	19.75	19.87	
Strain	88.48	86.42	81.87	82.57	G1&G3=2.04*
Job Satisfaction	2.98	3.00	3.30	3.12	
Organizational Commitment	3.99	3.81	4.02	4.19	G2&G4=2.09*
Type A Behavior Pattern	15.63	16.37	16.27	16.39	
Self-Esteem	16.12	15.67	16.35	16.19	
Load	24.10	26.04	25.12	26.16	G1&G2=-2.01*
Responsibility for Others	22.31	23.29	22.76	24.11	
Ambiguity	23.59	23.09	22.85	23.13	
Insufficiency	28.52	29.45	27.28	26.67	

Table 12 cont'd.

	G1 30 or Less	G2 31-40	Means G3 41-50	G4 50+	T-Test
Conflict	23.71	24.53	22.70	22.18	
Physical Environment	17.71	16.51	15.87	15.90	
Coping	119.77	123.56	126.89	127.33	G1&G3=-2.05*
Recreation	24.95	26.09	27.36	27.95	G1&G3=-2.06* G1&G4=-2.05*
Selfcare	24.38	25.35	26.08	27.97	G1&G4=-2.67** G2&G4=-2.30*
Rational/ Cognitive Coping	32.83	34.60	35.31	35.16	G1&G3=-2.40*
General Social Support	37.70	37.64	36.95	36.61	

* p < .05

** p < .01

*** p < .001

Table 13

Group Differences or Tenure

	G1 Less Than 5	G2 6-15	G3 16-25	G4 Over 25	T-test
Stress	140.96	140.67	142.22	129.75	
Hassles	22.93	21.73	18.91	23.36	
Negative Work Events	11.58	11.41	11.98	17.50	
Negative Nonwork Events	7.07	6.53	5.57	11.37	G3&G4=-2.20*
Vocational Strain	20.57	20.41	19.80	18.50	
Psychological Strain	25.03	23.25	22.53	25.08	G1&G3= 2.09*
Physical Strain	21.62	20.55	20.91	24.25	G2&G3=2.09*
Interpersonal Strain	21.25	20.07	19.78	19.58	
TABP	15.96	16.40	16.50	14.00	
Self-Esteem	16.11	15.75	16.47	16.75	
Load	24.34	25.20	27.86	24.33	G1&G3=-2.93** G2&G3=-2.51*
Responsibility	21.99	22.99	24.53	23.08	G1&G3=-2.27*
Ambiguity	23.56	23.41	22.21	21.66	
Insufficiency	29.07	28.95	27.36	22.83	G1&G4=2.82** G2&G4=3.01** G3&G4=2.04*
Conflict	23.95	23.87	23.39	20.33	
Physical Environment	17.86	15.95	16.60	16.67	G1&G2=2.48*
Job Satisfaction	3.01	3.02	3.30	3.27	
Organizational Commitment	4.07	3.84	3.99	4.36	G1&G2=-2.17* G2&G4=-2.15*
Strain	88.54	84.30	83.07	87.41	

Table 13 cont'd.

	G1 Less than 5	G2 6-15	G3 16-25	G4 Over 25	T-test
Coping	120.20	124.38	142.44	119.33	G1&G3=-3.01**
Recreation	24.93	26.60	27.57	26.08	G1&G3=-2.55*
Selfcare	24.57	25.90	26.57	25.41	G1&G3=-2.08*
Rational Cognitive	33.83	34.44	35.84	32.66	
General Support	37.15	37.16	39.04	35.16	

* p < .05

** p < .01

*** p < .001

months, 6-12 months) were included in the total correlation matrix. The zero order correlations for positive work and nonwork events with outcome measures were found not to be statistically significant and in the direction opposite to the hypothesis re stress-strain relationship. Negative work and nonwork events showed significant positive correlations with other stressors and significant negative associations with strain variables. A decision was thus made to use only the negative work and nonwork events as measures of the acute stress.

Work stress was thus measured using the total score on 'Occupational Environment Scales (as a measure of chronic work stress) and negative work events (as a measure of acute work stress). For Nonwork stress, the severity of hassles constituted the measure of chronic nonwork stress and negative nonwork events served to assess acute nonwork stress.

Multiple Regression Analyses

Tables 14-15 present the results of the multiple regression analyses carried out using different types of stressors to examine the variance in total strain. As Table 14 shows, the work and nonwork events do not add significantly to the explanation of strain if the measure of chronic stress is entered first in the regression equation. The total variance in strain, explained by these four stressors is 44.38%. Since Self-Esteem (at work) and

Table 14

Hierarchical Regression Analysis of Work and Nonwork
(chronic and acute) Stress on Strain

Variable	MR ²	Change in R ²	F	B
Stress	.2791	.2791	121.21	.528
Work events	.2813	.0021	.93	.050
Hassles (severity)	.4437	.1624	90.77	-.088
Nonwork events	.4438	.0001	.08	-.092

* $p < .05$

** $p < .01$

*** $p < .001$

Table 15

Hierarchical Regression Analysis Including Work, Nonwork
Stress, Self-Esteem (at work) and Type A Behavior Pattern
(at work)

	MR ²	Change in MR ²	F	B
Hassles (severity)	.2180	.3180	127.73***	.564
Stress	.4530	.1350	67.37***	.436
Work events	.4602	.0072	3.64*	-.095
Nonwork events	.4627	.0025	1.27	-.112
Self-Esteem	.4999	.0372	20.10***	-.216
TABP	.5000	.0001	.04	.010

* p < .05

** p < .01

*** p < .001

Type A Behavior Pattern were found to be among the 'best' possible subset of variables for the prediction of strain, a regression analysis was carried out adding these two variables. As the results in Table 15 show, Self-Esteem contributed significantly (addition to $R^2 = 3.72\%$, $B = -.216$) to the variance in strain whereas TABP was not statistically or conceptually meaningful in this analysis.

Hierarchical regression analyses including chronic and acute stressors from both work and nonwork dimensions were then performed. In the first analysis (Table 16a), two categories of stressors from the work domain were entered first followed by two types of nonwork stressors to examine the independent effects of nonwork stress. The order of entry was then reversed to examine the independent effects of work stress with nonwork partialled out (Table 16b). Chronic nonwork stress appears to be as good a predictor of strain as chronic work stress whereas acute stress, whether from work or the nonwork source, did not reach significance when entered second in the equation.

As previously mentioned, the acute stress score was added to scores on the two measures of chronic stress in order to get a composite of work and nonwork stress. Work and nonwork stress were then added to form a total stress index. The multiple correlations of these three indices and their components with total strain are presented in Table 17. Nonwork stress accounted for a slightly higher

Table 16(a)

Comparison of the Predictive Utility of Work and Nonwork
Stressors to Strain through Hierarchical Regression
Analysis

Work Stress Forced to Enter First

	MR ²	Change in MR ²	F	B
Stress	.2744	.2744	114.19***	.524
Negative work events	.2921	.0177	7.55	.153
Hassles (severity)	.4320	.1399	73.91***	.408
Negative nonwork				
events	.4354	.0033	1.71	.029

* p < .05

** p < .01

*** p < .001

Table 16(b)

Comparison of the Predictive Utility of Work and Nonwork
Stressors to Strain through Hierarchical Regression
Analysis

Nonwork Forced to Enter First

	MR ²	Change to MR ²	F	B
Hassle (severity)	.2957	.2957	126.78	.544
Negative nonwork				
events	.2996	.0039	1.68	.078
Stress	.4348	.1352	71.78	.389
Negative work events	.4354	.0006	.31	.029

* p < .05

** p < .01

*** p < .001

Table 17

Multiple Correlation of Work, Nonwork and Total Stress with
Strain

	R	R ²
Work Stress	.5453	.2973
Chronic	.5324	.2834
Negative work events	.3893	.1515
Nonwork Stress	.5476	.2998
Severity of hassles	.5509	.3032
Negative nonwork events	.3785	.1432
Total stress (work and nonwork)	.6583	.4333

degree of variance in strain than did work stress. For both work and nonwork stress, chronic stress was a better predictor of strain than acute stress. The index of total stress predicted strain better than either work or nonwork stress alone. The contribution of work and nonwork stress to total stress is reflected in Tables 18(a) and 18(b).

In order to examine any joint effects of work and nonwork stress on strain, a hierarchical regression analysis (Zedeck, 1971) was carried out in which work stress, nonwork stress and their cross-product were entered into the regression equation. Tables 19(a) and 19(b) present the results of these analyses. The addition of the cross-product term to the equation did not add to the explanation of variance in strain in terms of either statistical significance or meaningfulness.

Moderated Regression Analyses Using Coping Variables

Coping and Job Stressors. The zero order correlations between the coping scales and the variables presumed to be related to coping from a theoretical perspective, are presented in Table 20. The correlation of a coping strategy/resource with a stressor shows the extent to which use of that strategy is associated with the stressor, or the extent to which non-use of a particular coping strategy is associated with higher levels of stress.

From an examination of correlations, it appeared that for chronic work stressors, the coping strategies that seem

Table 18(a)

Contribution of Work and NonWork Stress to Total Stress

	MR ²	R ²	F	B
Nonwork stress	.6709	.6709	629.80***	.819
Work stress	1.000	.3291		.585

Table 18(b)

Contribution of Work and Nonwork Stress to Total Stress

	MR ²	R ²	F	B
Work stress	.7072	.7072	746.15***	.841
Nonwork stress	1.000	.2928		.585

* p < .05

** p < .01

*** p < .001

Table 19(a)

Joint Effect of Work and Nonwork Stress on Strain

	Change in			
	MR ²	R ²	F	B
Work stress	.2912	.2912	124.09***	.540
Nonwork stress	.4266	.1354	111.97***	.398
Work x nonwork stress	.4300	.0034	1.78	-.344

Table 19(b)

Joint Effect of Work and Nonwork Stress on Strain

	Change in			
	MR ²	R ²	F	B
Nonwork stress	.2987	.2987	128.63***	.547
Work stress	.4266	.1279	67.14***	.398
Nonwork stress x work	.4300	.0034	1.78	-.344

* p < .05

** p < .01

*** p < .001

Table 20

Zero Order Correlations for Stressors and Outcome Variables with Copino Scales

	Rational			Social Support		Coworker
	Recreation	Selfcare	Cognitive	General	Supervisory	
<u>Work Stress</u>						
Role Overload	-.147	-.167	-.103	-.002	-.256**	-.106
Role Insufficiency	-.116	-.068	-.098	-.171	-.315**	-.170
Role Ambiguity	-.154	-.180	-.306**	-.230*	-.470***	-.170
Role Conflict	-.153	-.183	-.205*	-.152	-.414***	-.166
Responsibility for People	-.089	-.100	-.062	-.032	-.097	-.128
Physical Environment	-.060	-.063	-.067	-.119	-.129	-.017
Total	-.219*	-.223*	-.181	-.154	-.489***	-.216*
Negative Work Events (Impact)	-.061	-.056	-.152	-.152	-.239*	-.181
<u>Nonwork Stress</u>						
Frequency of Hassles	-.235*	-.198*	-.200*	-.259**	-.063	.162
Severity of Hassles	-.237*	-.158	-.189	-.261**	-.056	-.152
Negative Nonwork Events	-.183	-.04	-.06	-.135	-.002	-.018
TABP (At Work)	.057	.007	.218*	.192	.044	.013
Self Esteem (At Work)	.137	.149	.362***	.237*	.181	.159
<u>Outcome Variables</u>						
Vocational Strain	-.163	-.228*	-.355***	-.176	-.299**	-.223*
Psychological Strain	-.355***	-.324***	-.398***	-.362**	-.259**	-.179
Interpersonal Strain	-.298**	-.102	-.232*	-.373***	-.069	-.110
Physical Strain	-.369***	-.323***	-.314**	-.233*	-.112	-.148
Total	-.396***	-.326***	-.422***	-.345***	-.231*	-.218*
Job Satisfaction	.069	.106	.126	.174	.343**	.228*
Organizational Commitment	-.011	.025	-.022	.116	.244*	.126

* p < .05

** p < .01

*** p < .001

to be the more strongly associated were supervisory support, recreation, selfcare and coworker support in that order. For specific role related stressors, supervisory support also seemed to be a common significant coping resource. Use of rational/cognitive coping and general social support were also negatively associated with role ambiguity. For negative work events, supervisory support was the only coping resource showing a significant correlation. For nonwork stress, general social support and recreation have significant associations.

Coping and Strain. The pattern of significant negative correlations between different coping strategies and strain variables suggested that strain is likely to be associated with recreation and selfcare as well as general social support resources. Supervisory and coworker support were found to be negatively correlated with total strain although not as strongly. Higher use of recreation and selfcare practices was significantly ($p < .001$) associated with lower psychological and physical strain and recreation with interpersonal strain. Rational/cognitive coping was significantly ($p < .01$) inversely related to all measures of strain. Supervisory support showed significant negative relationship with psychological and vocational strain. General social support was significantly negatively associated with psychological ($p < .01$) and interpersonal strain ($p < .001$). The organizational outcomes of job

satisfaction and organizational commitment were associated with only support from work sources.

The main hypotheses of this study were concerned with how the coping variables moderated the degree and/or the form of the relationship between the predictor and criterion variables. Moderating Regression Analysis (Zedeck, 1971) was used to examine these relationships. In this technique, the multiple correlation coefficients produced by equations which sequentially combine the moderator variables and the predictor variables in an additive manner are compared with the coefficients produced by equations which contain the cross-product of the predictor and moderator variables. Finding a significant incremental change in R^2 after the main effects (additive model) are accounted for, indicative of the 'joint effect' or 'multiplicative effect' (Pedhauzer, 1982) of the predictor and moderator.

Separate moderated regression analyses were carried out for different categories of stressors and the criterion variables of strain, job satisfaction, and organizational commitment. Tables 21-23 present the results of these analyses with respect to total stress, work stress and nonwork stress, respectively. In Table 21, it can be seen that coping added significantly ($p < .001$) to the variance in strain explained after the effects of total stress were partialled out ($F(3,297) = 52.57$, $B = -.306$). However,

Table 21

Moderated Regression Analysis of Total Stress on Strain
Using Coping as a Moderator

	MR	Change in R	F	B
Total stress	.4346	.4346	229.87***	.659
Coping	.5194	.0848	52.57***	-.306
Total stress x coping	.5194	.0001	.06	0.63

***p < .001

Table 22

Moderated Rearession Analysis of Work Stress on Strain, Job Satisfaction, and Organizational Commitment Using Coping as Moderator

Variables	Strain			Job Satisfaction			Organizational Commitment		
	MR ²	ΔR^2	B	MR ²	ΔR^2	F	MR ²	ΔR^2	B
a) Work Stress	.2974	.2974	135.87***	.545	b) .3622	.3622	.1788	.1788	69.91***
Coping	.4299	.1325	74.34***	-.347	c) .43***	183.43***	.1788	.1788	69.91***
Work Stress x Coping	.4325	.0027	1.49	-.364	.0006	.29	.1850	.0062	2.42*
					.0017	.84	.1931	.0081	3.19**
d) Chronic Stress	.2835	.2835	130.56***	.532					-.432
Coping	.4211	.1376	78.51***	-.382					-.081
Chronic Stress x Coping	.4299	.0039	2.20*	-.480					-.636
e) Negative Work Events	.1516	.1516	57.34***	.389					
Coping	.3398	.1882	91.22***	-.333					
Negative Work Events x Coping	.3398	.0000	.01	-.024					

* $p < .2$ ** $p < .1$ *** $p < .05$ **** $p < .01$

Table 23

Moderated Regression Analysis at Nonwork Stress on Strain
Using Coping as a Moderator

Variable	MR ²	Change in R ²	F	B
a)				
Nonwork stress	.2999	.2999	130.21****	.548
Coping	.4194	.1195	62.37****	-.361
Nonwork stress x coping	.4229	.0035	1.84*	.352
b)				
Severity (hassles)	.3034	.3034	142.88****	.551
Coping	.4189	.1155	64.97****	-.443
Severity x coping	.4220	.0031	1.77*	-.325
c)				
Negative nonwork				
events	.1432	.1432	50.99****	.378
Coping	.3280	.1848	83.58****	-.302
Negative nonwork				
events x coping	.332	.0047	2.15*	.461

* p < .2

** p < .1

*** p < .05

**** p < .01

when the cross-product of the total stress and coping were added, their joint effect, did not provide any additional information. For work stress (Table 22), coping was significantly ($F(3,319) = 74.34, p < .01$) related to strain independently (after partialling out the effects of work stress). Their joint effect was not, however, significant. Coping was also examined as a moderator of relationship between chronic work stress and job satisfaction and between chronic work stress and organizational commitment (Tables 22(b) and 22(c)). Coping did not add significantly to job satisfaction when entered second in the equation. For organizational commitment, the joint effect of work stress and coping was significant ($F(3,319) = 3.19, p < .05, \beta = -.636$). For nonwork stress (Tables 23(a) - 23(c)), the joint effects of stressors and coping were not statistically significant.

Further moderated regression analyses were carried out using specific coping strategies of recreation, selfcare, rational/cognitive and general social support as moderators of chronic work stress, negative work events, chronic nonwork stress (frequency of hassles and severity of hassles), negative nonwork events. The criterion variables used in these analyses were total strain, psychological strain, physical strain, interpersonal strain and vocational strain. The results of these analyses are shown in Tables 24-27. Except for the regression of recreation

Table 24

Recreation as Moderator of Stressors and Outcomes

	Total Strain			Psychological Strain			Physical Strain			Int. Personal Strain			Neutrosocial Strain		
	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B
Stress	.2835	130.56	.332	.2507	110.92	.501	.1351	1351	51.57	.308	.0537	18.72	.3432	3432	174.47
Recreation	.3577	.0742	-.235	.3210	.0702	-.269	.2029	.0678	27.99	-.264	.1284	.0747	.3438	.0006	29
Stress x Recreation	.3659	.0082	4.24**	.3248	.0039	1.89	.2115	.0085	3.54	-.625	.1306	.0022	.3476	.0038	1.90
Negative Work Events	.1516	1516	57.39	.2507	110.92	.501	.1351	1351	51.57	.308	.0537	18.72	.3432	3432	174.47
Recreation	.2596	.1080	46.70	.3248	.0039	1.89	.2115	.0085	3.54	-.625	.1306	.0022	.3476	.0038	1.90
Negative Work Events x Stress	.2876	.0030	3.47*	.2507	110.92	.501	.1351	1351	51.57	.308	.0537	18.72	.3432	3432	174.47
Nassies	.2820	.2820	128.84	.2215	93.34	.471	.1957	.1957	79.83	.442	.1504	.1504	.1281	1281	48.20
Recreation	.3407	.0587	84.51	.2809	.0593	26.98	.2449	.0492	53.03	-.228	.004	.0500	.1299	.0018	67
Nassies x Recreation	.3407	.0006	.00	.2810	.0002	.08	.2449	.000	.02	.028	.2018	.0014	.1301	.0002	88
Severity	.3034	.3034	142.88	.2344	100.41	.484	.2237	.2237	94.52	.473	.1651	.1651	.1330	1330	50.34
Recreation	.3563	.0520	26.84	.2890	.0546	25.12	.2619	.0432	19.26	-.215	.2108	.0456	.1343	.0012	46
Severity x Recreation	.3574	.0011	.57	.2894	.0004	.16	.2669	.0000	.02	.024	.2127	.0019	.1374	.0032	1.19
Negative Nonwork Events	.1832	.1832	50.99	.2344	100.41	.484	.2237	.2237	94.52	.473	.1651	.1651	.1330	1330	50.34
Recreation	.2298	.0865	34.15	.2894	.0004	.16	.2669	.0000	.02	.024	.2127	.0019	.1374	.0032	1.19
Negative Nonwork Events x Recreation	.2310	.0212	.48	.2894	.0004	.16	.2669	.0000	.02	.024	.2127	.0019	.1374	.0032	1.19

* p < .2

** p < .1

*** p < .05

**** p < .01

Table 25

Selfcare as Moderator of Stressors and Outcomes

	Total Strain			Psychological Strain			Physical Strain			Interpersonal Strain			Vocational Strain		
	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B
Stress	.2835	.2835	130.56	.532	.2507	110.42	.501	1351	1351	.0537	18.72	.232	.3432	3432	172.46
Selfcare	.3252	.0417	20.34	-.208	.3133	.0026	30.00	-.255	.1849	.0496	.50	-.039	.3511	.0079	3.98
Stress x Selfcare	.3262	.0010	.50	.197	.3151	.0018	.86	-.260	.1872	.0023	.91	.292	.3526	.0015	.75
Negative Work Events	.1516	.1516	57.34	.389											
Selfcare	.2301	.0785	32.63	-.281											
Negative Work Events x Selfcare	.2301	.0006	.01	.018											
Massles	.2820	.2820	126.64	.531	.2215	93.34	.471	1957	1957	.1504	56.07	.308	.1281	1281	48.20
Selfcare	.3317	.0497	24.31	-.226	.2946	.0731	33.89	-.274	.2461	.0504	.16	-.021	.1697	.0215	8.28
Massles x Selfcare	.3327	.0010	.48	.112	.2973	.0027	1.26	-.203	.2497	.0036	1.57	.233	.1699	.0002	.08
Severity	.3034	.3034	142.88	.551	.2344	100.41	.484	2237	2237	.1651	64.86	.406	.1330	1330	50.34
Selfcare	.3545	.0530	26.94	-.233	.3113	.0769	36.50	-.280	.2758	.0521	.23	-.026	.1564	.0233	9.04
Severity x Selfcare	.3607	.0042	2.15	.243	.3122	.0009	.43	-.112	.2827	.0069	3.14	.310	.1599	.0035	1.37
Negative Nonwork Events	.1432	.1432	50.99	.378											
Selfcare	.2223	.0790	30.89	-.262											
Negative Nonwork Events x Selfcare	.2268	.0046	1.78	.260											

* p < .2

** p < .1

*** p < .05

**** p < .01

Rational/coactive coping as Moderator of Stressors and Strain

Table 26

	Total Strain			Psychological Strain			Physical Strain		
	R^2	F	B	R^2	F	B	R^2	F	B
Stress	.2835	130.56	.532	.2507	110.42	.501	.1351	51.57	.368
Rational/Cognitive	.3761	48.86	-.308	.3389	43.56	-.300	.1863	20.67	-.229
Rational/CognitiveStress	.3796	.0035	1.83	.3556	8.75**	-.351	.1863	.0000	.00
Negative Work Events	.1516	57.34	.389						
Rational/Cognitive	.2701	1185	51.97	-.346					
Rational/Cognitive									
x Negative Work Events	.2702	.0001	.05	-.058					
Missiles	.2820	128.84	.531	.2215	93.34	.471	.1957	79.83	.442
Rational/Cognitive	.3767	49.69	-.311	.3137	43.92	-.307	.2427	20.26	-.219
Missiles x									
Rational/Cognitive	.3643	.0076	4.01**	.3172	.0035	1.68	.2536	.0110	4.80**
Severity	.3034	142.88	.551	.2344	91.14	.484	.2237	94.52	.473
Rational/Cognitive	.3972	50.81	-.310	.3261	44.51	-.306	.2692	20.35	-.216
Severity x Rational/Cog.	.4089	.0116	6.42**	.3329	.0068	3.34*	.2662	.0171	7.79**
Negative Nonwork Events	.1432	50.99	.378						
Rational/Cognitive	.2724	1292	53.97	-.340					
Negative Nonwork Events									
x Rational/Cognitive	.2836	.0112	4.72*	.623					

	Interpersonal Strain			Vocational Strain			Job Satisfaction			Organizational Commitment		
	R^2	ΔR^2	F	R^2	ΔR^2	F	R^2	ΔR^2	F	R^2	ΔR^2	F
Stress	.0537	.0537	18.72	.232	.3432	172.47	.3213	.3213	157.14	.1626	.1626	64.09
Rational/Cognitive	.0778	.0241	8.59	.157	.4163	178.1	.3230	.0017	85	.1703	.077	22.45
Stress/Rational Cognitive	.0784	.0007	.24	.210	.4245	188.2	.3231	.0002	.08	.1703	.000	.03
												.072
Negative Work Events												
Rational/Cognitive	.1504	.1504	58.07	.308	.1281	1281	.4820	.358				
Rational/Cognitive	.1679	.0175	33.00	.134	.2225	2225	.3967	.311				
Negative Work Events	.1859	.0180	7.19**	.708	.2234	2234	.40	.163				
Rational/Cognitive	.1851	.1851	64.88	.408	.1330	1330	.5034	.365				
Rational/Cognitive	.1822	.0171	8.83	.132	.2273	2273	.3991	.311				
Severity/Rational Cognitive	.2057	.0235	9.69**	.796	.2296	2296	.4022	.95	.246			
Negative Remark Events												
Rational/Cognitive												
Negative Remark Events												
n Rational/Cognitive												

* p .2
 ** p .1
 *** p .05
 **** p .01

Table 27

General Support as Moderator of Stressors and Outcomes

	Total Strain			Psychological Strain			Physical Strain			Interpersonal Strain			Vocational Strain		
	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B	R ²	F	B
Stress	.2835	2835	120.56	.532	2507	110.42	.501	1351	.1351	51.57	368	0537	0537	18.72	0129
General Support	.3613	.0778	40.10	-.282	.3074	0567	-.241	.1719	.0368	14.62	-.194	.1602	1065	41.74	-.330
General Support x Stress	.3617	.0003	17	126	.3088	.0016	.64	.1723	.0003	13	.127	.1603	.0001	.03	-.060
Negative Work Events	.1516	.1516	57.34	3.89											
General Support	.2378	.0862	36.19	-.296											
Negative Work Events x General Support	.2382	.0004	.18	.095											
Hassles	.2820	.2820	128.84	.531	.2215	.2215	93.34	.471	.1957	79.83	.442	.1564	1504	56.07	.285
General Support	.3377	.0557	83.38	-.242	.2832	.0417	18.51	-.210	.2163	.0205	8.56	-.147	.2293	.0749	31.61
Hassles x General Support	.3417	.0340	1.97	.304	.2660	.0028	1.25	.256	.2279	.0116	4.90*	.520	.2253	.0000	.00
Severity	.3039	.3039	142.88	.551	.2344	.2344	100.41	.484	.2237	.2237	94.52	.473	.1651	1651	64.88
General Support	.3537	.0503	25.43	-.231	.2723	.0379	17.04	-.201	.2405	.0168	7.25	-.134	.2350	.0699	29.87
Severity x General Support	.3580	.0043	2.18	.314	.2783	.0060	2.71*	.330	.2508	.0103	4.48*	.486	.2250	.0002	.08
Negative Nonwork Events	.1432	.1432	50.99	.378											
General Support	.2362	.0910	36.13	-.305											
Negative Nonwork Events x General Support	.2454	.0112	4.47**	.536											

* p .2
 ** p .1
 *** p .05
 **** p .01

(Table 24) on vocational strain for hassles and hassle severity, all of the coping strategies added significantly to the proportion of variance explained by different types of strain, after the effects of stressors were partialled out. It can be seen in the Tables that in a total of 20 out of the 76 such analyses showed statistically significant joint effects of the predictors with the moderator. The contribution to the variance in terms of incremental R was, however, minimal in most cases. Rational/cognitive coping seemed to be an important moderator (9 out of 19 analyses statistically significant). Except for chronic work stress and the total strain and for chronic stress and vocational strain (where rational/cognitive coping seemed to moderate the stress-strain relationship, as predicted), it seemed to augment the stress-strain relationship in all other cases. Selfcare seemed to increase the degree of stress-interpersonal strain relationship when the cross product of stress and selfcare is entered in the equation, contrary to expectations. Recreation seemed to moderate the effects of stress on physical strain ($F = 3.54$, $p < .05$). General social support was a significant moderator for chronic nonwork stress and physical strain ($F = 4.90$ for hassle frequency and $F = 4.48$ for hassle severity). The sign of B , however, was in the opposite direction than expected.

Moderated regression analyses for supervisory support

Tables 28(a) to 28(g) present the results of the analyses using supervisory support as a moderator of relationship for different categories of stress and different outcomes. As was presented in Table 20, the zero order correlations show negative correlation for supervisory support with all measures of strain. These correlations were significant for vocational and psychological strain, the two types of strain more associated with work stress. Supervisory support was positively and significantly associated with job satisfaction and organizational commitment. However, when supervisory support is entered second in the regression equation after stress variable, its independent additive effects, or their joint effects in terms of their contribution to explaining the variance in the above outcomes, are non significant. Using negative work events as a predictor, supervisory support does have significant independent effect ($F = 8.75$, $p < .001$, $B = -.156$) for explaining variance in strain. The joint effects are, however, not significant.

To examine the question whether social support tends to be domain-specific, support from work and nonwork sources were compared for their effect on strain associated with work and nonwork sources. Moderated regression analyses were conducted using supervisory support and general social

Table 28

Moderated Regression Analysis of Work Stressors on Strain Using Supervisory Support as Moderators

	Strain			Job Satisfaction			Organizational Commitment		
	MR ²	ΔR ²	F	B	MR ²	ΔR ²	F	MR ²	ΔR ²
a) Stress	.2753	.2753	125.36***	.525	.3249	.3249	160.26***	.1642	.1642
Supervisory Support	.2768	.0015	.70	.046	.3287	.0038	1.86*	.1680	.0038
Supervisory Support Stress	.2774	.0006	.27	.113	.3316	.0029	1.44	.1689	.0009
d) Negative Work Events	.1413	.1413	52.84***	.376	.2000	.2000	81.23***	.1051	.1051
Supervisory Support	.1642	.0029	8.75***	-.156	.2654	.0655	28.88***	.1438	.0387
Supervisory Support x Negative Work Events	.1651	.0009	.34	.071	.2669	.0015	.66	.1439	.0001
g) Stress	.3384	.3384	168.78***	.582					
Supervisory Support	.3385	.0001	.03	.009					
Supervisory Support x Stress	.3386	.0001	.06	.052					

* p < .02

** p < .05

*** p < .01

**** p < .001

support as moderators for different categories of work, nonwork and total stress. The results (Table 29) showed significant joint effects were found for total stress and general support ($F = 2.46, p < .05$), nonwork stress and general support ($F = 3.49, p < .05$) and for work stress and supervisory support ($F = 1.92, p < .20$). The contribution to the variance in strain as indicated by the amount of incremental R^2 was, however, minimal in all cases. No subgroup analyses were carried out given such small effects. However, an examination of beta weights shows the buffering effects of supervisory support on nonwork-strain and total stress-strain relationship. The independent effect of general social support for all categories of stressors was found to be significant. Supervisory support, however, did not seem to show significant independent effects when it was entered into the question, after total stress or work stress, but showed significant ($p < .001$) effects for nonwork stress.

In Table 30, the results of coworker support regressed on strain for chronic and total work stress are presented. Coworker support was found to be a significant independent predictor of strain when effects of chronic work stress were partialled out ($F = 3.36, p < .05$). However, contrary to expectations, coworker support was not significant predictor of strain in combination with total work stress (the sum of chronic and acute stress are combined). The

Table 29

Moderated Regression of Work, Nonwork and Total Stressors Using Different Sources of Support as

Moderators

General Social Support					Supervisory Support				
	MR ²	Change in R ²	F	B		MR ²	Change in R ²	F	B
Work Stress	.2974	.2974	135.87****	.545	Work Stress	.2854	.2854	129.17****	.534
General Social Support	.3663	.0689	34.81****	-.265	Supervisory Support	.2862	.0008	.37	.033
Work Stress x General Stress	.3667	.0004	.19	.117	Work Stress x Supervisory	.2873	.0011	.51	.139
Nonwork Stress	.2999	.2999	130.21****	.548	Nonwork Stress	.3028	.3028	132.05****	.550
General Social Support	.3506	.0508	23.69****	-.233	Supervisory Support	.3399	.0371	17.02***	-.193
Nonwork Stress x GSS	.3579	.0073	3.49**	.419	Nonwork Stress x SS	.3402	.0003	.16	-.222
Total Stress	.4346	.4346	229.87****	.659	Total Stress	.4281	.4281	223.85****	.654
General Social Support	.4737	.0390	2.29****	-.203	Supervisory Support	.4281	.0001	.04	-.009
Total Stress x GSS	.4780	.0043	2.46*	.363	Total Stress x GSS	.4312	.0030	1.59	.209
					140				

* p < .02
 ** p < .05
 *** p < .01
 **** p < .001

Table 30

Moderated Regression Analysis of Stress on Strain Using
Coworker Support as Moderator

	MR ²	Change in R ²	F	B
Stress (Chronic Work)	.2841	.2841	126.22****	.533
Coworkers Support	.2917	.0075	3.36**	-.089
Stress x Coworker Support	.2931	.0005	.21	.109
Work Stress (Chronic & Acute)	.2854	.2854	128.17****	.534
Coworker Support	.2862	.0008	.37	.033
Work Stress x Coworker Support	.2873	.0011	.51	.139

** p < .05

*** p < .001

joint effect of work stress and coworker support failed to reach significance in either case.

Intercorrelation of Subscales

Since a number of composite scores were used in the main analyses, it was decided to look at the inter subscale correlations of and their relative contribution to both the composite index to the various outcome variables.

Chronic work stress. The matrix of zero order correlations for six subscales used to measure chronic stress at work are presented in Table 31. High correlations would suggest multicollinearity among the subscales. As can be seen, role conflict was highly positively correlated with role insufficiency and role ambiguity. Role load showed a high positive correlation with responsibility for others. In terms of their relative contribution to the composite index, the results of a simple multiple regression analysis using the six subscales are shown in Table 32. Role conflict entered first accounts for approximately 70% of the variance in the composite chronic stress index. Given the high multicollinearity of role conflict with role insufficiency and role ambiguity, the relative contribution of these two scales (role insufficiency and role ambiguity), although significant, was much lower than would be expected from their simple correlations with the composite index. Role load entered second in the regression equation, and

Table 31

Zero Order Intercorrelations of Stress Subscales and to Composite Stress Score

	Role Load	Role Insufficiency	Role Ambiguity	Role Conflict	Responsibility to Others	Physical Environment
Role Load	1.00					
Role Insufficiency	-.132	1.00				
Role Ambiguity	.306**	.341***	1.00			
Role Conflict	.219*	.660***	.562***	1.00		
Responsibility to Others	.477***	.194	.034	.001	1.00	
Physical Environment	.201*	.117	.194	.203*	.138	1.00

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 32

Multiple Regression Analysis of Work Stress (Chronic) Using
Six Subscales as Predictors

Variable	Change		F	B	n
	MR ²	in MR ²			
Role Conflict	.6987	.6987	482.88**	.799	.7987
Role Load	.7872	.0885	191.42***	.397	.5601
Role Insufficiency	.8449	.0577	101.18***	.347	.6009
Responsibility					
for People	.9010	.0561	153.56***	.275	.3884
Role Ambiguity	.9917	.0442	1428.14***	.256	.6737
Physical Environment	.9475	.0465	239.57***	.227	.4879

* p < .05

** p < .01

*** p < .001

explained approximately 9% of the variance independent of role conflict.

Tables 33-34 present the results of multiple regression analyses carried out between different subscales of chronic work stress and different outcomes. Using total strain as the criterion, responsibility for others and role ambiguity were the only subscales which did not show significant relationships. When job satisfaction and organizational commitment were each used as the criterion, the only two categories of stressors that reached significance were role insufficiency and role conflict. Role insufficiency showed a much stronger negative relationship with job satisfaction ($B = -.691$) than with organizational commitment ($B = -.147$) whereas the reverse was true for role conflict ($B = -.233$ for job satisfaction and ($B = -.488$) for organizational commitment). Using different categories of strain as the criterion variable, different patterns of relationships emerged for different types of strains (Table 34).

The intercorrelation matrix involving the five work stressors and work events is presented in Table 35. Chronic work stress was found to have a high positive correlation with negative work events. For work events reported for the six months immediately preceding the completion of the questionnaires, high significant correlations were obtained with total work events ($p < .001$) and negative work events ($p < .001$). Work events

Table 33

Multiple Regression of Total Strain, Job Satisfaction and Organizational Commitment Using Chronic Work Stress Subscales

	MR ²	MR ²	F	B
<u>a) Strain</u>				
Role Conflict	.2278	.2278	98.22***	.477
Physical Environment	.2750	.0472	21.61***	.224
Role Insufficiency	.2904	.0154	7.29***	.176
Role Load	.3022	.0118	5.49***	.114
$Y' = 31.96 + .7822 + .6594 + .4760 + .4071$				
<u>b) Job Satisfaction</u>				
Role Insufficiency	.4775	.4775	307.24***	-.691
Role Conflict	.5084	.0309	21.08***	-.233
$Y' = 32.13 - .3774 - .1732$				
<u>c) Organizational Commitment</u>				
Role Conflict	.2380	.2380	103.70***	-.438
Role Insufficiency	.2502	.0122	5.39***	-.147
$Y' = .8467 - .7857 - .2436$				

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 34

Multiple Regression of Different Types of Strain Using Chronic Work Stress Subscales

	MP^2	ΔMP^2	F	B
a) Vocational Strain				
Role Conflict	.3503	.3503	179.51	.592
Role Insufficiency	.3831	.0328	103.08	.240
Physical Environment	.4002	.0171	73.62	.135
Role Ambiguity	.4145	.0143	58.40	.140
$Y' = 5.52 + .242 + .149 + .115 + .122$				
b) Psychological Strain				
Role Conflict	.2174	.2174	92.56	.466
Physical Environment	.2383	.0209	51.93	.149
$Y' = 10.30 + .4353 + .1251$				
c) Physical Strain				
Physical Environment	.1010	.1010	37.43	.318
Role Conflict	.1619	.0609	32.08	.254
Role Load	.1799	.0179	24.20	.140
$Y' = 7.72 + .271 + .220 + .140$				
d) Interpersonal Strain				
Physical Environment	.0374	.0374	12.93	.193
Role Conflict	.0520	.0146	5.10	.124
$Y' = 15.10 + .1661 + .1028$				

Table 35

Intercorrelational Matrix of Different Work Stressors

	Chronic Work Stress	Work Events Total Impact)	Positive Work Events	Negative Work Events	Events 0-6 Months	Events 6-12 Months
Chronic Work Stress	1.00					
Work Events (Total Impact)	.350***	1.00				
Positive Work Events	-.146	.467***	1.00			
Negative Work Events	.486***	.797***	-.117	1.00		
Work Events (0-6 Months)	.309*	.835***	.345***	.684***	1.00	
Work Events (6-12 Months)	.178	.585***	.345***	.434***	.044	1.00

* p < .05

** p < .01

*** p < .001

reported for the six to twelve months prior to the completion showed the same pattern of relationship, although lower in strength than for the 0-6 month timeframe. As expected, positive work events showed negative relationships with chronic work stress and with negative work events, although these correlations were not statistically significant.

Nonwork Stress. The intercorrelations for different measures of nonwork stress are shown in Table 36. Hassle frequency and hassle severity were highly positively ($p < .001$) correlated with total and negative nonwork events ($p < .001$), although the strength of relationship was higher for the severity measure than the frequency measure. Nonwork events in 0-6 month timeframe, when compared with events in 6-12 month timeframe showed stronger associations for all except negative nonwork events where 6-12 month timeframe seemed to be more significant.

The pattern of relationships examined above for work and nonwork events would suggest that for negative work events, the association was higher for the 0-6 month timeframe than negative nonwork events. Positive work events did not show any difference for the time factor whereas positive work events seemed to show higher association with 0-6 month timeframe than for 6-12 month timeframe. Means and standard deviations for the total work and nonwork events are shown in Table 37.

Table 36

Intercorrelational Matrix of Different NonWork Stressors

	Hassles (Frequency)	Hassles (Severity)	Nonwork Events (Total Impact)	Positive Nonwork Events	Negative Nonwork Events	Events 0-6 Months	Events 6-12 Months
Hassles (Frequency)	1.00						
Hassles (Severity)	.933***	1.00					
Events (Total)	.523***	.560***	1.00				
Positive Events	.159	.170	.643***	1.00			
Negative Events	.557***	.591***	.790***	.06	1.00		
Events (0-6 months)	.422***	.470***	.773***	.587***	.535***	1.00	
Events (6-12 months)	.322***	.332***	.648***	.306**	.600***	.02	1.00

* p < .05

** p < .01

*** p < .001

Table 37

Descriptive Statistics on Work and Non-Work Events

	Work Events		Non-Work Events	
	Mean	S.D.	Mean	S.D.
Total Impact*	20.40	12.55	10.30	7.95
Impact of Negative Events	11.60	10.96	6.60	6.12
Impact of Positive Events	8.60	7.52	3.60	4.52
Events (0-6 months)	13.70	10.13	6.40	5.98
Events (6-12 months)	6.60	6.78	3.90	5.03

*Maximum possible score for impact of work events and non-work events were 93 and 129 respectively.

Strain. Subscale intercorrelations for different types of strain are presented in Table 38. Psychological strain was found to show high positive relationships with all other types of strain. Vocational strain was found to be significantly related to psychological, physical strain and interpersonal strain. Interpersonal and physical strain were also positively related. This would imply a high degree of multicollinearity among different types of strain. A simple multiple regression involving the four strain subscales showed that psychological strain alone accounted for a high proportion of variance, an R^2 of .776 (Table 39a) in Strain. It was for this reason that the total strain index was used in all the major analyses in this study.

Table 39(b) presents the intercorrelation matrix of job related outcomes. Vocational strain was found to be highly negatively correlated with job satisfaction and moderately correlated with organizational commitment. Job satisfaction and organizational commitment showed a high positive correlation, as expected ($r = 0.45$).

The zero order correlations of both work and nonwork stressors for different categories of strain are presented in Table 40. Again psychological strain was highly positively correlated ($p < .001$) with all types of stressors, although showing stronger associations with chronic work and nonwork stressors. As expected,

Table 38

Intercorrelations of Strain Subscales and with Total Strain

	Vocational Strain	Psychological Strain	Interpersonal Strain	Physical Strain	Total Strain
Vocational Strain	1.00				
Psychological Strain	.630***	1.00			
Interpersonal Strain	.197*	.460***	1.00		
Physical Strain	.415***	.667***	.509***	1.00	

* p .05

** p .01

*** p .001

Table 39(a)

Multiple Regression Analysis of Strain Using Four
Categories of Strain

	Change				
	R ²	in R ²	F	B	r
Psychological Strain	.7756	.7756	943.80**	.880	.8804***
Physical Strain	.8986	.1236	332.91***	.468	.8448***
Interpersonal Strain	.9458	.0472	236.56***	.257	.6803***
Vocational Strain	.9928	.0471	1779.47***	.280	.7136***

* p < .05

** p < .01

*** p < .001

Table 39 (b)

Intercorrelation Matrix of Work Related Outcome Variables

	1	2	3
Vocational Strain	1.00		
Job Satisfaction	-.614*	1.00	
Organizational Commitment	-.301	.450*	1.00

* P < .001

Table 40

Zero Order Correlations of Stressors with Different Types of Strain

	Vocational	Psychological	Interpersonal	Physical
Stress	.584***	.507***	.217*	.352***
Negative Work Events	.421***	.365***	.208*	.197
Hassles (Severity)	.389***	.501***	.398***	.481***
Negative Nonwork Events	.112	.327***	.389***	.339***

vocational strain showed stronger association with both types of work stressors than did nonwork stressors. Interpersonal strain showed, again as expected, stronger associations with nonwork stressors. Physical strain had the highest positive association with chronic nonwork stress followed by chronic work stress. Simple correlations for different aspects of work and nonwork events with different types of strain are presented in Table 41. Vocational strain was not significantly related to any aspect of nonwork events whereas the reverse was true for interpersonal and physical strain which showed strong positive associations with nonwork events. Positive work events were significantly negatively associated with vocational and psychological strain.

Coping. Intercorrelations of various coping strategies and their correlation with total coping are presented in Table 42. Except for recreation and selfcare which showed a high positive correlation ($r = 0.49$ and $r = 0.327$ respectively), the other subscales had relatively low positive correlations, thus indicative relatively low multicollinearity.

Comparisons with Osipow and Spokane's (1985) study on which norms were developed using their U.S. sample for chronic stress, strain and coping measures are presented in Appendix U.

Table 41

Zero Order Correlations of Work and Nonwork Events with Different Types of Strain

	Vocational	Psychological	Interpersonal	Physical
Work Events (Total Impact)	.208*	.181	.193	.187
Negative Events Impact	.421***	.365***	.208*	.187
Positive Events Impact	-.273**	-.223*	.040	.049
Events (0-6 Months)	.226*	.162	.142	.176
Events (6-12 Months)	.044	.093	.142	.074
Nonwork Events (Total Impact)	.107	.240*	.346***	.298**
Negative Events Impact	.112	.327***	.389**	.339**
Positive Events Impact	.026	-.008	.073	.080
Events (0-6 Months)	.089	.170	.183	.277**
Events (6-12 Months)	.066	.182	.334***	.147

* p < .05

** p < .01

*** p < .001

Table 42

Intercorrelational Matrix of Coping Subscales and to Total Coping

	Recreation	Selfcare	Rational Cognitive	Social Support
Recreation	1.00			
Selfcare	.490***	1.00		
Rational/Cognitive	.354***	.327***	1.00	
Social Support	.332***	.206	.363***	1.00

* p < .05

** p < .01

*** p < .001

Type A Behavior Pattern (TABP)

Since TABP in the work context was included as a variable of exploratory interest only, no major analyses initiated. Zero order correlations of TABP with other stress correlates were examined and are presented in Table 43. In terms of stressors, TABP was significantly and positively associated with role load, responsibility for others and with positive work events. It showed negative associations with role insufficiency, role ambiguity and role conflict, furthermore, TABP was not found to be significantly related to any of the outcomes. TABP showed a significant and positive ($r = .218$, $p < .05$) association with rational/cognitive coping strategy. TABP was also significantly ($r = .343$, $p < .001$) positively related to reported self esteem in the work context.

Some researchers have treated TABP as a stressor. Although it was not found to have significant associations with any of the stress outcome variables used here, it was examined here as a stressor.

Differences in the TABP scores for occupational category, gender, age and tenure were examined (Tables 10-13). No significant differences for age or gender were found. With respect to the occupational category, managers had the highest mean score on TABP, followed by officers

Table 43

Zero Order Correlations of Type A Behavior Pattern (At
Work) with Other stress Correlates

	<u>r</u>
<u>Stressors</u>	
Load	.418***
Insufficiency	-.237*
Ambiguity	-.068
Conflict	-.087
Responsibility for People	.413***
Physical Environment	.121
Total Stress	.123
Positive Work Events	.238*
Negative Work Events	-.157
<u>Outcomes</u>	
Vocational Strain	-.106
Psychological Strain	-.025
Interpersonal Strain	.024
Physical Strain	.042
Job Satisfaction	.183
Organizational Commitment	.072
<u>Personal and Coping Resources</u>	
Recreation	.057
Selfcare	-.007
Rational/Cognitive	.218*
Social Support - General	.192
- Supervisory	.044
Self Esteem	.343***

* p < .05
 ** p < .01
 *** p < .001

and support staff. The differences between the means for these occupational categories were statistically significant. These differences were significant for Support and Managers ($t(217) = -5.10, p < .001$), between Officers and Managers ($t(227) = 3.03, p < .01$) and between Support and Officers ($t(232) = -2.03, p < .05$). In terms of tenure, the highest means score was for the group with a length of service of 16-25 years and lowest for those above 25 years of service with the organization. Except for this latter group which had significantly lower mean scores than all other groups, the intergroup differences because of tenure were not found to be significant.

Some researchers have reported that a majority of managers show a very high degree of TABP characteristics. To examine that proposition, the scores were divided into quartiles and the differences for the different occupation categories were examined (Table 44). This showed relatively higher proportion of managers and supervisors in the high TABP category.

Self-Esteem at Work

Table 45 presents the zero order correlations between self-esteem and other stress related variables. Self-esteem was negatively associated with all stressor variables. The correlations were much higher with work related stressors than with nonwork stressors. This was expected since the self-esteem scale used in this study was

Table 44

TABP and Occupational Differences

	Q1		Q3
	0-12	13-21	21 & Over
Support	37.5%	46.5%	16.0%
Officers	35.4%	45.8%	18.7%
Managers/Supers.	22.4%	44.0%	33.6%

TABP score theoretical range: 0-30

Table 45

Zero Order Correlations of Self Esteem (At Work) with Other
Stress Correlates

Variables r with self-esteem

Stressors

Work Related

Role Load	.053
Role Insufficiency	-.526***
Role Ambiguity	-.356***
Role Conflict	-.511***
Responsibility for People	.193
Physical Environment	-.030
Total	-.378***
Negative Work Events	-.353***

Non-Work Sources

Negative Nonwork Events	-.009
Severity of Hassle	-.255

Outcomes

Vocational Strain	-.607***
Psychological Strain	-.454***
Interpersonal Strain	-.129
Physical Strain	-.212*
Total Strain	-.446***
Job Satisfaction	.549***
Organizational Commitment	.227*

Personal Coping Resources

Recreation	.137
Selfcare	.149
Rational/Cognitive Coping	.362***

Social Support

General	.237*
Supervisory	.272**
Coworker	.245**

* $p < .05$

** $p < .01$

*** $p < .001$

related to the work dimension of a respondent's life. In terms of outcome variables, self-esteem was found to be negatively correlated with all strain measures. These correlations were all significant except for the interpersonal strain. Self-esteem was also positively and significantly associated with job satisfaction and organizational commitment, this degree of association being higher for job satisfaction. In terms of coping variables, social support from all sources and rational/cognitive type of coping were positively related to self-esteem.

Because of the high negative correlations of self-esteem with other predictors and with measures of strain, and the significant positive correlations of self-esteem with coping variables, it was decided to perform a moderated regression analyses using self-esteem as a moderator variable. These analyses were carried out for work stress, nonwork stress and total stress and the results are presented in Table 46. Although the joint effects failed to reach significance, self-esteem had a significant independent effect on the explanation of variance in total strain.

Many researchers have examined self-esteem as a criterion or dependent variable in stress research. A multiple regression analysis was carried out using work related stressors as predictors of self-esteem. Results of this analysis are shown in Table 47. As can be seen, role

Table 46

Moderated Regression Analysis of Stressors on Strain with
Self Esteem as Moderator

	MR ²	Change in R ²	F	B
Non-Work Stress	.3082	.3082	133.62**	.555
Self-Esteem	.4222	.1140	58.99***	-.351
Non-Work Stress x Self-Esteem	.4260	.0038	1.98*	.212
Work Stress	.2887	.2887	128.69***	.537
Self-Esteem	.3662	.0775	38.64***	-.307
Work Stress x Self-Esteem	.3687	.0025	1.24	-.243
Total Stress	.4333	.4333	225.58***	.658
Self-Esteem	.4808	.0475	26.87***	-.240
Total Stress x Self-Esteem	.4819	.0011	.65	.133

* p < .05

** p < .01

*** p < .001

Table 47

Regression of Stressors on Self-Esteem

	b	B	T
(a = 23.53)			
Role Load	.010	.017	.301
Role Insufficiency	-.144	-.304	-4.718***
Role Ambiguity	-.0637	-.092	-1.694
Role Conflict	-.159	-.274	-3.904***
Responsibility for People	.0518	.82	1.560
Physical Environment	.0325	.045	.937

Multiple R = .5776

RSQ = .3336

insufficiency and role conflict accounted for significant amount of variance in self esteem. The total variance in self-esteem accounted for by all six stressors was approximately 33% ($R^2 = .3336$). Role insufficiency and role conflict seemed to be two significant predictors.

In terms of group differences on demographic variables, there were no significant differences in this sample for age, gender or tenure. The differences for occupational categories were significant in that mean self-esteem scores reported by managers were highest, followed by officers and the support category had the lowest mean scores. These differences were statistically significant for officers and managers ($t(225) = 3.20, p < .01$) and for support and managers ($t(213) = 3.30, p < .001$). As was previously mentioned in this section, self-esteem was a significant independent predictor of work stress, accounting for approximately 4% of the variance (incremental $R^2 = 3.72\%$, $p < .001$).

Discussion

The study addressed several issues concerning the measurement of, and relationships between, work stress, on-work stress, strain and coping for employees in a large public service organization. Before discussing the findings related to specific hypotheses of this study, the major findings are summarized.

Summary of the Major Findings of the Study

1. Work stress and nonwork stress were found to be significant independent predictors of strain, although they did share common variance. Total stress (derived from the sum of the work stress and nonwork stress scores) was found to be a better predictor than either work stress or nonwork stress alone. The additive hypothesis rather than an interactive hypothesis of a work stress and nonwork stress was supported.

2. Work stress was found to be a stronger predictor of work related outcomes (vocational strain, job satisfaction and organizational commitment) than was nonwork stress. Nonwork stress was found to be a better predictor of interpersonal strain. Psychological strain and physical strain were found to be associated with both work stress and nonwork stress.

3. For both work stress and nonwork stress, chronic stress was found to explain a much higher proportion of the variations in strain scores than did acute stress.

4. Negative stress was found to predict strain better than positive stress as measured by work/nonwork events and was found to be a better predictor than total stress (derived from the sum of the positive and negative impact added).

5. Both the frequency and the impact of work events and nonwork events was found to be higher for the six months immediately preceding the completion of the questionnaire than for the previous six months.

6. Significant gender differences for nonwork stress and nonwork specific outcomes were found, with females reporting higher scores on both measures. No significant gender differences were found for work stress.

7. Significant occupational differences in terms of the type of stressors were found. Support staff reported higher scores for role insufficiency, officers were higher on role conflict and role ambiguity, and managers were higher on role load and responsibility.

8. All coping variables were found to show significant negative associations with all stressors and all coping variables were found to be significant, independent predictors of strain.

9. For all coping variables, including general and supervisory social support, a direct effects model was supported. No theoretically meaningful moderation effects were found, although there were some statistically

significant. For rational/cognitive coping and for general social support, finding modest moderator effects was contrary to the hypotheses of this study which indicated that high levels of coping in combination with high stress should have reduced the stress-strain relationship.

10. In terms of source of support at work, supervisory support was found to be a significant predictor of job related outcomes and was found to be a better predictor than coworker support.

11. Type A Behavior pattern was found to be positively associated with occupational status, with managers reporting the highest mean scores. The pattern of the relationships between TABP and stressors and outcome suggests that TABP might be a role-specific response. Although a higher number of managers were found to have high TABP scores in conjunction with the associated stressors of load and responsibility which are inherent in managerial jobs, it was difficult to offer any interpretations of the cause and effect relationships.

12. Self-esteem at work emerged as a strong correlate of stress, strain and coping, showing negative associations with stressors and strain and positive associations with coping variables.

Discussions of Findings of the Study

The design of this study was correlational and cross sectional. No causal inferences can thus be made about the

results obtained. Only statements about the strength of relationships and associations among variables and the direction of these, the so called "level of associational knowledge" (Tripodi, 1981) can be made. The use of terms such as predictor, criterion or outcome variables is for the sake of convenience in naming the three sets of variables.

Test for Hypothesis 1

Work stress was found to explain a significant proportion of the variance in vocational strain, psychological strain, physical strain, job satisfaction and organizational commitment. As expected, both chronic stress and negative work events were positively related to all measures of strain and negatively to the positively valued outcomes of job satisfaction and organizational commitment. Work stress accounted for 28% of the variance in total strain, 34% in vocational strain, 36% in job satisfaction and 18% in organizational commitment.

Negative work events contributed 14% to the explanation of variance in total strain and 25% in vocational strain.

Chronic work stress. Total chronic stress level ($\bar{X}$ = 140, s.d. = 24.62) which was derived at by computing the total of six subscales, was normally distributed across the sample and did not show any significant differences for age, gender and occupational categories. For tenure with the organization, the group with over 25 years of service

showed lower mean stress levels than did other groups, however, these differences were not statistically significant. This group of employees is very close to retirement and did not seem to be affected as much by stressors such as role conflict, role insufficiency and role ambiguity.

No comparative studies with other Canadian samples are currently available. In a study by Osipow and Spokane (1985), which was done with a sample representative of many different white collar occupations in the United States, higher median scores for role load and higher median scores for role insufficiency were reported for males, while higher median scores for role ambiguity and role load were found to be characteristic of females (Appendix U). However, since the breakdown of male and female samples by occupations was not available for Osipow and Spokane's study, it is difficult even to speculate about these differences and whether they are attributable to gender, occupation or to differences in the work environments in their sample and this sample.

For the specific chronic work stressors, the pattern of intercorrelations and the results of the exploratory factor analysis showed that role conflict, role insufficiency and role ambiguity seem to load on one factor while role load and responsibility for others loaded on a second factor.

Acute Work Stress

Subjects reported that the average impact of job events which had happened in the previous 12 months was approximately 20 ($X = 20.44$, $s.d. = 12.55$), whereas Weiss, Ilgen, and Sharbaugh (1982) who used only the frequency count of job events had reported much higher average for their sample ($X = 24.7$, $s.d. = 16$).¹ The Weiss et al. (1982) sample consisted primarily of supervisors and managers which had an even lower average impact in the present sample ($X = 17.96$, $s.d. = 16.84$).

When the impact of work events was considered, subjects reported a much higher average impact of negative events than positive events and a much higher impact of job events in the six months immediately preceding the completion of the questionnaire than in the previous six months. These findings will be dealt with in a discussion of hypothesis 3.

It was noteworthy that correlations obtained between role insufficiency and job satisfaction and between role conflict and strain, job satisfaction and organizational commitment were far larger than the correlations usually obtained in samples drawn from larger populations. One explanation could be that both these stressors (i.e., role insufficiency and role conflict) capture the conflict between the expectations of an educated employee population for challenging, stimulating work and the lack of such work

in a public sector bureaucracy. This became even clearer when the multiple regression analysis results were examined. Role conflict seemed to account for much of the variance in the composite work stress index (70%), with role load independently accounting for an additional 8.8%. Role conflict seemed to subsume role insufficiency and role ambiguity (the other two types of conflict) as their independent contribution was only 5.7% and 4.4% respectively. Similarly, stress due to responsibility for others seemed to be accounted for by role load.

In terms of the associations of these stressors with various outcome variables, all stressors showed significant relationships with all of the outcome measures. Most of these relationships were in the expected direction, i.e., higher stress and higher strains were associated with lower job satisfaction and lower organizational commitment. Role load and responsibility for others, however, were negatively related to vocational strain and, role ambiguity was negatively related to interpersonal and physical strain.

Negative associations of role load and responsibility for others with vocational strain were unexpected and worthy of further examination. Occupational class differences were examined for the types of stressors reported. Both role load and responsibility for others were significantly positively associated with occupational

status. Managers reported the highest stress on both of these scales. Also as the Factor analysis indicated, both of these stressors loaded on a different factor than other stressors. Occupational status also loaded statistically significantly on this factor. This would suggest that managerial and non-managerial staff reported different types of stressors. Support staff, for example, manifested the highest scores on role insufficiency and physical environment stressors whereas the officer group had highest stress scores associated with role ambiguity and role conflicts. For support staff, these findings are understandable, since support jobs in large organizations are generally of a routine nature, and opportunities to move out of these jobs into more senior jobs are much more limited. Support jobs would thus be associated with the greatest under-utilization of skills and offer the lowest degree of fulfillment of expectations in terms of challenge and satisfaction from one's career. Managers seemed to be affected by stressors that had more to do with actual job performance (load, responsibility, etc.).

For physical environment, there were significant occupational class differences with support staff reporting significantly higher stress than officers and managers. There were also significant gender differences with females reporting higher stress than males ($t(342) = 2.82, p < .01$). Since females are overrepresented in the support

category, these findings were expected. Although no explanations as to why females or support staff perceive a higher degree of stress from their physical working conditions than do officers/managers in the same work location can be inferred from this study, two hypotheses are offered. The first has to do with the nature of the jobs that support staff perform. Most of these jobs require constant use of equipment such as typewriters, word processors, photocopiers, video display terminals, etc. which could account for a higher degree of perceived stress related to the noise, lighting, ventilation and crowding factors associated with the work location.

The second hypothesis relates to Herzberg's (1966) theory of motivation related to work. According to this theoretical position, when an individual's job lacks in motivation (challenge, opportunity, etc.), he or she might become more preoccupied with such extrinsic factors as pay and working conditions. This hypothesis seems tenable as support staff in this sample showed higher role insufficiency and lower job satisfaction than other occupational classes and also higher stress because of the physical environment. This hypothesis needs further confirmation from other comparative samples.

Strains also seemed to affect different occupational groups differently. Although no significant differences were found in the total levels of strain reported, managers

showed the lowest degree of total strain, especially vocational strain. They also reported lower psychological and interpersonal strain. The only type of strain where there are no significant differences was on physical strain. On the job satisfaction measure, managers reported the highest degree of job satisfaction. These differences were significant between support and managers ($t(219) = 3.06, p < .01$) and between officers and managers ($t(228) = 2.75, p < .05$). For organizational commitment, again, managers reported the highest degree of commitment and the officers showed the lowest degree of commitment. The difference between officers and managers was significant ($t(226) = 3.13, p < .01$) as was the difference between officers and support staff ($t(228) = 2.50, p < .05$). These findings suggest that different types of stressors tend to be associated with different types of outcome. When role conflict is low, workers enjoy their jobs and when the job offers opportunities for the utilization of their skills, workers' feelings and attitudes towards their job and the employing organizations are not much affected although they do report physical strain and some psychological and interpersonal strain. This pattern was applicable to the managerial group in this study. A high degree of ambiguity in the job, a factor that is more a function of the organization, seemed to be associated with lower organizational commitment. This was the case for the

officer group in this sample. When stress was greater because the job lacked challenge, one's feelings and attitudes towards the job were negatively affected as was the case for the support staff.

The pattern of intercorrelations of work related outcomes was examined. Job satisfaction and organizational commitment showed strong negative associations with vocational strain. However, job satisfaction showed much stronger associations than organizational commitment. The same two work stressors, role insufficiency and role conflict, had strong negative associations with both job satisfaction and organizational commitment. The strength of these relationships was much higher for job satisfaction than for organizational commitment. This was in keeping with the position stated earlier that organizational commitment seems to be a relatively stable phenomenon than job satisfaction and may not be as much or as easily affected by the experience of stress at work.

Test for Hypothesis 2

It was hypothesized that stress from nonwork sources, as measured by the frequency and severity of daily hassles and the impact of nonwork events in the recent past, would have negative work and nonwork consequences for the individuals. Results of this study provided strong support for this hypothesis. For both hassles and negative work events, the relationship with strain measures were

significant and in the expected direction. Daily hassles (severity) was a stronger measure of nonwork stress than was nonwork events in terms of explaining variance in total strain.

Nonwork stress was examined for its associations with different outcome measures. Negative nonwork events showed a significant positive relationship with interpersonal, physical and psychological strain. However, the relationship between the job related outcomes (vocational strain, job satisfaction and organizational commitment) and negative nonwork events was not significant. These findings are not consistent with those of Bhagat et al. (1985) who, using a measure of life events, had reported that nonwork stress was significantly associated with job related outcomes. Not only did Bhagat et al. (1985) use life events as a measure of nonwork stress they also asked participants to check events in the prior three years. As will be discussed later, chronic nonwork stress measure (hassles) will be shown to account for most of the variance in outcome measures.

Daily hassles (both frequency and severity) were significantly and positively related to all types of strain and negatively to job satisfaction, but did not show any relationship with organizational commitment. To the extent that items in the hassle scale reflect problems common to work and nonwork domains (for example commuting,

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not having enough time for family), the hassle scale should show a positive relationship to such work related outcomes such as job satisfaction, vocational strain though it would not be expected to affect people's feelings towards the organization.

The mean frequency of hassles reported for the previous 30 days was approximately 21.84 (s.d. = 13.15) out of the 100 hassles listed, while the mean hassle severity rating for this sample was 36.04 (s.d. = 26.19). These figures were comparable to those reported by DeLongis et al. (1982) who reported an average frequency of 20.6 hassles per month (s.d. = 15.1) and a cumulative severity rating of 30.28 and by Ivancevich (1986) who report a mean rating of 22.3 and cumulative severity rating of 36.34.

Females in this sample reported a higher number of hassles than did males and this difference was statistically significant ($t(341) = 2.50, p < .05$). The average rating of the impact of total nonwork events over the past one year for this sample was 10.31 (s.d. = 7.95). Weiss et al. (1982) using the same scale with only supervisory and managerial sample had reported an average rating of 9.23 (s.d. = 4.23). Gender differences for negative nonwork events in this sample were significant with women reporting a higher degree of impact from such events ($t(317) = 2.88, p < .01$). On the other hand, for the normative sample (university students) Sarason et al.

(1978) had reported no significant gender differences.

When the frequency and impact of nonwork events was compared for their valence for respondents, the ratio was about 2:1 for negative and positive events both for the frequency and impact measures ($\bar{X} = 6.68$, s.d. = 6.12 for negative and $\bar{X} = 3.61$, s.d. = 4.52 for positive nonwork events).

In summary nonwork stress of both a chronic and an acute nature had significant positive relationship with strain. The hassles measure was a better predictor of outcomes than was negative life events measure, showing significant relations with job satisfaction and with all types of personal strains. The associations were strongest for interpersonal, psychological and physical strain. Negative nonwork events were not significantly related to any of the job related outcomes.

Test for Hypothesis 3

Chronic vs. acute stress. It was hypothesized that chronic stress would predict strain and organizational outcomes to a better extent than would acute stress. Acute stress scores were obtained by the measure of impact of work and nonwork events reported by subjects. Findings of this study offered robust support for this hypothesis. The concept of chronicity, or duration, is an important one in the stress framework as both the cognitive processes and

the coping resources may differ according to whether one is coping with a long duration stressor or with a short term event (Beehr & Bhagat, 1985; Weick, 1979). A higher association of chronic stress to negative outcomes can perhaps be explained the theory of learned helplessness espoused by Abramson, Seligman, and Teasdale (1978). Long term stress and repeated coping and adaptive resources may induce the person to experience an apparent lack of control over his or her stressful environment. Such a lack of control over important outcomes could lead to negative psychological consequences (Abramson et al., 1978).

For nonwork stress, the pattern of correlations suggested that severity of hassles was more strongly associated with all outcome measures than were the negative nonwork events. The proportion of variance in strain that was accounted for by hassle severity and by the negative events was 30% and 14% respectively. However, the variance in strain attributable to negative events was also accounted for by hassles. Negative nonwork events were not found to add significantly to the R^2 when entered into the regression equation after hassle severity. Thus negative life events may be deemed to have had little effect on strain independent of daily hassles.

The results further suggested that hassles contributed to symptoms independent of major events. In predicting strain, a substantial relationship remained for hassle

severity even after the effect due to events had been removed (Table 48). Moreover, the remaining variance in strain predicted by hassles was generally greater than was the case for nonwork events and strain. Thus, although daily hassles overlap considerably with life events as was indicated in the intercorrelation matrix of nonwork stressors, they operate quite strongly and independently of life events in predicting strain.

For work stress, the pattern of the relationship between chronic and acute stress was similar to that of nonwork stress. Chronic stress was found to account for 28.1% of the variance in strain whereas negative work events accounted for 15%. When chronic stress was entered first in the regression equation, the additive effect of negative events, although statistically significant, was minimal in terms of its contribution to R^2 (.0177). When the effect of negative events was partialled out, chronic stress was still a significant predictor of strain. In fact the remaining relationship between chronic stress and strain was greater than that between negative events and strain.

The above findings are consistent with the findings of Kanner et al. (1981) and those of DeLongis et al. (1982) who found that hassles were more useful predictors of psychological and somatic symptoms. Lazarus and DeLongis (1983) found weak correlations between hassles and life

Table 48

Hierarchical Regression of Acute and Chronic Work and
Nonwork Stressors

	R^2	Change in R^2	F	B
(a)				
Work Events	.0660	.0660	23.33*	.257
Stress	.2781	.2121	96.66*	.492
(b)				
Negative Work Events	.1424	.1424	53.80*	.377
Stress	.2888	.1464	66.49*	.437
(c)				
Nonwork Events	.0806	.0806	27.36*	.284
Severity	.2985	.2179	96.59*	.554
(d)				
Negative Nonwork Events	.1445	.1445	51.86*	.380
Severity	.2995	.1549	67.67*	.494

*P < .001

events and posited that the two approaches (life events and hassles) may be mutually exclusive and that hassles might predict health outcomes independent of life events. In this study, the correlation between nonwork events and hassles was relatively high, a finding that is consistent with that of Nezu (1984) who reported a high correlation with the same two measures. Furthermore he suggested that increased levels of stress because of life events are associated with increases in the frequency of current problems. Pearlin et al. (1981) also suggested that life events exacerbate existing hassles.

The percentage of variance in strain explained by work and nonwork (negative and positive combined) events was 6% and 8% respectively. This relationship is consistent with the results of their meta-analyses of studies by Rabkin and Streuning (1976) and Thoits (1983) involving the relationship of life events to the onset and incidence of both psychological disturbances and physical illness. They reflected that life events accounted for no more than 9% of the variance. Ivancevich (1986) also reported that life events accounted for 6% of the variance in general health symptoms in his sample.

However, the approach to life events measurement used in this study allowed for the separation of negative and positive events. When the contribution of negative events was examined separately, the proportion of variance

associated with strain increased to 14% each of work and nonwork events. The combined contribution of negative work and negative nonwork events was, however, 20%, a figure significantly above the 9% reported in the meta-analyses by Rabkin and Streuning (1976) and Thoits (1983). These findings suggest that associations between life events and strain can be substantially improved when only negative events are considered.

Positive and negative stress. The comparison for the differences in the effects of positive and negative stress could only be made for acute stress as chronic stress measures did not include positive stress indicators. The pattern of correlations between positive events and negative events both for work and nonwork suggested low degree of association, thus indicating their independence from each other. Negative events both at work and nonwork were related positively to different types of strain and accounted for significant shared variance in strain as discussed in the previous section. Positive nonwork events failed to reach significance for any of the outcome measures.

Positive events were significantly positively associated with job satisfaction. This is consistent with the findings for Bhagat et al. (1985) who reported that positive stress does not contribute to the prediction of organizational outcomes but is, however, positively

associated with positive organizational outcomes and negatively to negative outcomes.

This result was not surprising. The work of Holmes and Rahe (1967) was based on the notion that life change per se required adjustment and that this process of readjustment, whether positive or negative, was assumed to be stressful. More recent work has shown that negative or undesirable life events account for most of the shared variance between life events and dysfunction whereas desirable events related, if at all, primarily to positive adjustment spheres (Zautra & Reich, 1983; Bhagat et al., 1985; Rowlison & Felner, 1988). Dooley, Rook and Catalano (1981) reported that desirable job events in fact buffered or reduced the adverse effects of undesirable job events on symptoms for females in their study.

Subjects reported the impact of negative events and positive events in 2:1 ratio both in work and nonwork domains. These differences, perhaps, could be attributed to individuals' recall of events which can be influenced by such factors as memory, response tendencies and affective status as Anisman and Zacharko (1982) have suggested. For example, in the context of stress management discussion, subjects might selectively recall and emphasize the negative more than the positive events. The other possibility, of course, is that in the present times, individuals are experiencing more negative than positive changes in their lives. Further longitudinal research is needed to clarify the role of these individual and societal factors.

Time dimension. The frequency and impact reported for the six months (0-6 months) immediately preceding the completion of the questionnaires was much higher than for the preceding six months (6-12 months), both for work and nonwork events. The arguments advanced above applied in this case as well. Memory (recent events are more easily remembered) could be an important factor here from individuals' recall point of view. The second possible explanation that more change has, in fact, happened in the immediately preceding six months than the previous six months could be equally plausible. Could it be that it was this increase in the degree of stress in subjects' lives that prompted them to attend stress management seminars or other training seminars of which a stress management was a necessary component?

Hypothesis 4

The hypothesis predicted a stronger relationship of strain with total stress (work and nonwork combined) than with work or nonwork stress alone. An important research issue here was to determine whether the effects of work and nonwork stress were interactive or independent and different types of analyses were carried out to test the nature of this relationship. In both Canonical Correlational Analysis and the Principle Components Analysis, work and nonwork stress appeared on different variates or factors. The hierarchical regression analysis, including the cross-product term of work and nonwork stress to the additive

model, also provided no support for the interaction hypothesis.

Total stress accounted for 43.54% of the variance in strain with work and nonwork stress accounting for 29.21% and 29.95% respectively. Analyses carried out with negative events also suggest that work and nonwork events were equally good predictors of strain and when taken together accounted for approximately 21% of the variance in strain (Table 49). The pattern of results suggested that although both work and nonwork stress were significantly related to strain, the combined effect of these two sources was a better predictor than either alone. It further suggested that stress from work and nonwork contribute to stress independently of each other. A substantial relationship remained for nonwork stress after the effects of work stress are partialled out and vice versa.

A correlation ($r = .351$) between chronic work and chronic nonwork stress and ($r = .456$) between work and nonwork events suggested that there was some degree of common content between their respective measures. Weiss et al. (1982) reported similar association ($r = .40$) for their sample. Delongis et al. (1982) examined the problem of overlap between the Hassles scale and the other two measures in their study. They computed two sets of hassles score, one set which included the items that could potentially artificially inflate the relationships between

Table 49

Hierarchical Regression of Work and Nonwork Negative Events
For Strain

	MR ²	R ²	F	B
Negative Work Events	.1430	.1430	57.56*	.378
Negative Nonwork Events	.2096	.0666	25.46*	.277
Negative Nonwork Events	.1430	.1430	50.58*	.378
Negative Work Events	.2096	.0666	25.44*	.277

*P < .001

hassles scores and the other two measures, and the other set that did not include these items. In both cases, the correlation between the full scale and altered scale was .99. Hence analyses presented in this study are for total hassles scores in order to facilitate comparisons with other studies using this scale.

Some overlap of work and nonwork stressful experiences is to be expected both for intrinsic and instrumental reasons. The empirical work of Kohn and Schooler (1973) and Bhagat et al. (1985) has shown that the perception and the affective experiences evoked at work spillover to employees' nonwork life to some extent and vice versa. Also, regardless of the individual's success in compartmentalization of work and nonwork stressors, the material rewards, successes, problems and penalties of the job carry over into the nonwork life and vice versa. For example, a cut in the salary will require changes in the lifestyle and thus could increase life stress. The addition of a new family member may impose role overload not only in the nonwork domain but could also affect how much work can be accomplished in a day because of fatigue.

Hypothesis 5, 6 and 7

The hypotheses that coping resources would moderate the effects of stress on strain were examined separately for work stress and nonwork stress.

For work stress, separate analyses of chronic and

negative work events stress as well as total work stress failed to show any moderating effects of coping (total index). Significant main effects for coping were found, however, for the explanation of variance in strain and in organizational commitment. Coping was not a significant independent predictor of job satisfaction when examined in combination with total work stress. Job satisfaction as an outcome showed high correlations in this study with role conflict and role insufficiency. These are the types of stressors which may be beyond an individual's control. An individual in a dissatisfying job may try to deal with the situation by a job change or by leaving. Such effects are not always successful or possible, particularly in times of fiscal restraints. An individual may be forced to stay in a job that he or she does not like. Symptom management type of coping may help deal with the daily physical and psychological tensions without having a beneficial effect on one's feelings towards one's job.

The same pattern held for coping as a moderator of nonwork stress (hassles, negative nonwork events and total) and strain. Coping added significantly to the variance in strain after the effects of stressors were partialled out. In the case of negative nonwork events, the remaining relationship between coping and strain was greater than between events and strain. No moderator effects were evident for any three categories of stressors.

Separate analyses were carried out to examine the moderating effects of four specific coping strategies using four categories of strain as well as total strain (Tables 24-27). Recreation as a coping strategy showed a statistically significant moderating effect on the relationship between chronic stress and physical strain ($F(3,328) = 3.54, p < .05$), between chronic stress and total strain ($F(3,328) = 4.29, p < .01$) and between negative work events and total strain ($F(3,319) = 3.47, p < .05$). Statistically significant moderating effects of self care for chronic stress and interpersonal strain ($F(3,328) = 6.99, p < .001$) and for hassle severity and psychological strain ($F(3,326) = 3.14, p < .05$) and between hassle severity and interpersonal strain ($F(3,326) = 4.99, p < .01$) were found. The change in R^2 after adding the interaction term, however, was minimal in all cases. Subgroup analyses or interpretation about the pattern of relationships for moderator effects would thus be meaningless, and were not attempted here.

Rational/cognitive coping showed a number of statistically significant moderator effects. In the work context, these effects were significant for psychological and vocational strain and in the nonwork context, these were significant for physical, interpersonal as well as total strain. Again, increments to the R^2 were very low. An examination of standardized regression coefficient

(B), however, revealed that in combination with rational/cognitive coping, the effects of stress on strain were exaggerated. Osipow and Davis (1988) reported similar findings for rational/cognitive coping. Low levels of rational/cognitive coping in their study were more effective in reducing strain. According to the theoretical model of this study, buffering should reduce the strength of association between stressors and strain, independently of the direct effect on strain of a coping strategy. As Karasek et al. (1982) point out, this proposition implies that buffering will exist even if the coping strategy actually results in increased strain in some situations. They mentioned this in the context of social support and offered the possibility of 'negative support' inconsistent with the conventional buffer model for coping and social support. For example, when an individual's own environmental stressors are low and social cohesion is high, he or she might serve as a sympathetic ear for the problems of his more strained coworkers or family member. Similarly high levels of rational/cognitive coping skills may increase stress in a situation of high role ambiguity and conflict and where the individual lacks the control to make desired changes. For general social support in this study also, the cross-product term of nonwork stress and general social support augmented the effects of nonwork stress. The pattern of relationships examined through

subgroup analysis and graphs suggests that high general support augmented the relationship between nonwork stress and physical strain. The moderator effects obtained through these subgroup analyses were not statistically significant.

LaRocco et al. (1980) had reported that social support moderated the effects of stressors on health outcomes such as somatic complaints but not on job related or attitudinal outcomes. This study confirmed LaRocco et al.'s findings as social support seemed to have moderator effects only on physical strain. There is no obvious theoretical basis for expecting social support to act as a moderator of some stress-strain relations and not others.

Hypothesis 8

Hypothesis 8 dealt with the effects of supervisory support on strain and other outcome variables. It was predicted that when faced with stressful environment at work, those employees who reported high support from their supervisors would report lower strain than those reporting low support. Data presented in Table 20 clearly indicated the association between work stressors, strain and supervisory support. A consistent significant negative relationship occurred between supervisory support and work stressors and strain variables. The nature of this relationship was positive for positively valued outcomes of job satisfaction and organizational commitment. Co-worker

support, another work based supportive relationship, showed basically the same pattern although the correlations were not significant for majority of the variables. The hypothesised moderating effect of supervisory support for chronic, acute or total work stress and different outcomes was not found. The independent effects of supervisory support when added to the regression equation after the stressors had been entered, were not significant except for negative work events and job satisfaction and negative work events and organizational commitment. It seemed that chronic stress took into account the presence of supervisory support. Given the important role that a supervisor plays in terms of allocating work, clarifying job expectations, rewarding good performance or reprimanding subordinates for poor performance, etc., it would make sense that the degree of supervisory support determines the degree of perceived chronic stress rather than being, in itself, an additional independent source of stress. When confronted with negative events in the workplace, supervisory support was a significant independent predictor of feelings towards both the job and the employing organization. Perhaps when change becomes stressful, employees look to the supervisors as a provider of support to cope with this change. The presence or absence of supervisory support in such situations could be an important determinant of employee's feelings of

satisfaction with their work and their feelings of loyalty towards their employer.

The absence of moderator effects for supervisory support in this study was contrary to the findings of Kobasa and Puccetti (1983) who reported that supervisory support moderated the effect of life events on illness symptoms. Kobasa and Puccetti's (1983) study employed only executives who were undergoing very high levels of work events because of a high level of change in their organization. Everyone was affected by such changes including the bosses. Perhaps supervisory support operates differentially in such highly cohesive groups and homogeneous groups.

To examine whether social support tends to be domain-specific or generalizable to both work and nonwork stress irrespective of the source of support, the effects of supervisory support and general support on strain in combination with work and nonwork stressors were explored. No support was found for domain-specific or source-specific social support. The pattern of correlations, however, showed stronger associations between general social support, nonwork stress and nonwork specific outcomes (interpersonal, psychological and physical strain) whereas supervisory support showed stronger associations with work stress, and work related outcomes (vocational strain, job satisfaction, organizational commitment).

Type A Behaviour Pattern (TABP)

TABP showed positive correlations with some stressors and negative correlations with others. Role load, responsibility and positive work events were associated positively with TABP whereas role insufficiency and negative work events were associated negatively. TABP also showed negative correlations with vocational and psychological strain and positive correlations with job satisfaction and organizational commitment.

When examined for its contribution to the explanation of strain in a canonical correlation analysis and in a multiple regression analysis, TABP did not emerge as an independent predictor of stress. To the contrary, the pattern of correlations suggested that high TABP individuals although reporting higher load and responsibility than low TABP individuals, seemed to be happier in the job context (negative correlation with role insufficiency, vocational strain, psychological strain, positive correlations with job satisfaction and organizational commitment, fewer negative work events, higher positive work events).

These findings were consistent with the findings of Gurin, Veraff and Feld's (1960) data in the national survey study, Americans View Their Mental Health. Gurin et al. (1960) pointed out that job involvement characteristic of individuals high on Type A was positively associated with

occupational status and greater emotional rewards.

Positive associations with role load and responsibility did not seem to be associated with the types of strain related to these stressors (physical and interpersonal strain) for the TABP individuals.

Since managers are thought to report high TABP, occupational status differences were examined. Managers did report significantly higher TABP scores than either officers or support staff. At least two hypotheses can account for these results. Managerial jobs have more accountability and responsibility assigned to them. Could it be that these types of pressures in the managerial jobs require one to respond with behavior patterns that have been associated with TABP? Or is it that people who advance to managerial jobs have habits and behavior patterns that reinforce acquiring higher responsibility and high time pressure (overload) types of jobs? This study does not allow us to determine which hypothesis is more plausible.

The relationship of TABP to work events (positive association with positive events and negative association with negative events) was intriguing. This pattern of relationships could again suggest two related theoretical explanations: (1) individuals high on TABP perceive more happenings at work as challenges and because of their tendency to get involved in many things, are instrumental

in making positive change happen for them; or (2) work organizations reward the type of behaviors at work which are associated with high Type A individuals, for example, working under tight deadlines, assuming responsibility, etc. Support for the first explanation comes from the social learning model of TABP which posits the need for constant striving and proving through accomplishments as cognitive antecedents of TABP (Price, 1982, p. 71). The second explanation is based on the social and cultural antecedents of TABP which place high values on hard driving and competitive achievement striving (Price, 1982).

Another explanation worth considering here has to do with the quality of performance at work. High TABP individuals seemed to be enjoying their jobs, had a positive attitude towards work and the organization and were also high on self-esteem, it is likely that their performance in the work context was better and they experience more rewards and fewer negative changes. As can be seen from Table 10, managers reported the lowest impact of negative events, followed by support staff with the officers reporting the highest. In terms of positive work events, managers and support staff showed equal impact with officers having lower than these two groups.

Self-Esteem at Work

Self-esteem showed high negative relationships with all categories of stressors and strain variables and

significant positive associations with positively scaled outcomes and coping variables. High self-esteem individuals reported much lower role conflict and role ambiguity and were more likely to report enjoying their work (lower vocational and psychological strain, lower role insufficiency, higher job satisfaction). High self-esteem individuals also had positive feelings towards their organization. It is interesting to note significant positive relationships between self-esteem and social support from all sources. This is consistent with Beehr's (1985) findings that individuals with high self-esteem are likely to be more confident and willing to seek information than individuals with low self-esteem. Findings of significant positive association of self-esteem with all coping strategies confirm the research by Garrity, Somer, and Marx (1977) who reported that strong self-esteem is a factor associated with individuals who are successful at coping with stressors. Self-esteem was included in this study as an exploratory variable. It was examined for its role as a moderator of stress-strain relationship, as an outcome variable and also as a stressor. Although self-esteem did not show any significant effects as a moderator, it was a significant independent predictor of both stress and strain.

Conclusions and Implications for Future Research

The present research went beyond the immediate

boundaries of the work organization and examined stress in the employee's life outside of as well as within the work situation. From the foregoing discussion several conclusions seem warranted. First, as a result of this study there appears to be some justification for concluding that work stress is related to individually and organizationally valued states. This would serve to extend the work of American researchers to a white-collar Canadian public service population. Secondly, the significant relationship between negative nonwork stress and the work related outcomes suggests that people do not separate their personal lives from their job lives, and that there is a spillover of the effects of nonwork stress on organizational outcomes.

Thus, in attempting to diminish negative outcomes and enhance positive ones, organizations may need to examine external sources of stress in addition to stressors based on individuals' work roles. This may in turn require the expenditure of greater efforts towards personal life counselling designed to help employees deal with the problems they encounter in their nonwork life.

The findings of higher nonwork stress and nonwork related outcomes for women may be explained by the dual role burden experienced by working women with family responsibilities. The fact that stress is more evident in the nonwork domain perhaps points out that their family

role for females is still a more predominant and more legitimate area for the expressing of role stress.

Since support for the additive model of work and nonwork stress rather than an interactive model (with some overlap) was evident, one may conclude that stress derived from work and nonwork events may be studied separately. Any comprehensive stress study should, of course, include both aspects in the measurement of individual stress.

In terms of the nature of stress, it would seem from the findings of this study that both chronic stressors and life events were significantly associated with outcome measures. Negative work and nonwork events explained a much higher percentage of variance in strain than has been reported in the literature (21%). For scientific parsimony to be best served, however, it is suggested that only chronic stress could be used without much loss of explanatory power. In the present sample, work and nonwork events did not have an independent effect on psychological, physical, interpersonal or vocational outcomes beyond what was produced by chronic measures of stress alone. Moreover since chronic stressors are more likely than life events to represent problems in one's daily routine, they offer better potential for preventive intervention in both work and nonwork domain than life events which are to a large degree outside an individual's control.

The results indicated that negative stress both in work

and nonwork domains consistently predicted work and nonwork related outcomes to a greater extent than did positive stress. However, positive work events were significantly associated with job satisfaction in a direction opposite to the relationship shown by the negative stress, i.e., higher positive work events were associated with higher job satisfaction, whereas higher negative events were associated with lower job satisfaction. The role of positive work stress should not be ignored in work stress research. The reverse effect of negative and positive stress highlights the need for studying negative and positive stress separately rather than combining them in the same index.

In this study, positive stress was studied only in the context of acute stress. Chronic measures of positive stress in the work and nonwork domains would perhaps provide a better indication of its effects on individuals as was the case for negative stress. The Uplifts scale (Kanner et al., 1981) could be used as the means by which chronic nonwork stress could be measured. Furthermore, there is a need to develop measures of chronic positive stress in the work context.

In view of the finding that subjects reported more events in the immediately preceding six months than the previous six months, further research needs to be pursued in order to clarify the impact of individual recall factors

such as memory, selective recall, etc. on life events research.

Analyses with different categories of strain produced results that were different from the total index of strain. Also the relationships of various stressors with the different types of strain highlight the importance of providing different measures of vocational, physical, psychological and interpersonal strain in stress research. Inclusion of various behavioral and biomedical measures of stress and strain would have perhaps provided a more accurate measurement of stress and would probably have improved the degree of explanation of the variance in strain. In the work context, for example, some objective measures of performance would have provided useful information about the relationship of stress to its effects. Job satisfaction and organizational commitment seemed to show a very similar relationship to various work stressors with job satisfaction consistently showing stronger relationships than organizational commitment. People's feelings toward their job seem to be more strongly affected than their feelings toward their organization. Other research has reported similar patterns of relationship between job satisfaction and organizational commitment. The explanation of the relationship of these two outcomes to the same work stressors may be simply that job satisfaction and organizational commitment seem to

represent a very similar construct with job satisfaction being a more potent indicator of both magnitude and temporal dimension in that it gets affected scores than does organizational commitment. The pattern of role conflict and role insufficiency, the two stressors associated with job satisfaction and organizational commitment, was, however, different. Role insufficiency was more strongly associated with job satisfaction than was role conflict. The reverse was true for organizational commitment.

Coping mechanisms appeared to be largely unsuccessful in moderating the stress-strain relationships even when specific strains are studied. This is consistent with the findings of Osipow and Davis (1988) who report a very limited moderator effect of coping on the specific stress-strain relationship. The study measured stress, strain and coping cross-sectionally. Where coping mechanisms are successful in reducing the impact on strain resulting from stress, the outcome is lower stress-strain relationship. The measure of the stressor's effect on strain then is a post-hoc measure occurring after the relationship has been moderated by coping. This may explain why the proportion of variance in total strain explained by stressors is not higher than 43% and why many coping resources were not significant moderators. Longitudinal studies particularly in organizations where a

coping intervention may be implemented may clarify the value of coping resources. The counterintuitive findings regarding the effects of high levels of coping, especially rational/cognitive and general social support, on the stress-strain relationship, need to be explored further.

These findings confirm the inadequacy of the buffering hypothesis and provide support for the direct effects model of coping on stress-strain relationship.

For social support, the results suggested that individuals who use support are likely to benefit from it. In the work context, social support, especially from one's supervisor showed a consistent relationship with a variety of personal and job outcomes. The finding of no moderator effects for supervisory support in the stress-strain relationship provided support for the main effects model similar to other coping resources.

In summary, the transactional model of stress dynamics adapted in this study was generally supported by the findings. Perceived chronic, negative stress in the work and nonwork domains appeared to be associated with negative personal and organizational consequences as predicted by the model. Work related outcomes were more strongly associated with work related stressors and personal outcomes. More particularly, interpersonal strain was more strongly associated with nonwork stressors. Coping (in the form of active problem solving or symptom management) and

support from work and nonwork sources are helpful in reducing the magnitude of various negative outcomes for the individuals. However, a lack of moderator effects and some unexpected findings for high levels of rational/cognitive coping necessitate a reexamination of the model. A modified model of stress dynamics which keeps all the principle components of the stress theory, but one which more accurately represents the findings of this study is presented in Figure 3. This model is perceptually oriented and it is assumed that although the objective aspects of work and nonwork environment are important and serve as a fundamental experiential basis to which people respond, it is the individual's perception based on their appraisal of the nature (demand or opportunity), frequency and the magnitude of impact of these stressors determine whether a given experience is construed to be stressful and whether it is viewed as a positive or negative stressor. While the effects of chronicity and the duration of the stressors was implied in the appraisal process in the original model, the modified model represents this separately in order to highlight the more important role of chronic, persistent stressors on both the perception of stress and strain. This is because of the lack of individual control and persistent burden on coping resources which chronic stressors could induce. Coping and support resources in the modified model are included to show the direct effect

Figure 3

Modified Model of Stress, Strain and Coping

*Only the variables included in this study are listed.

on various outcomes. The experience of the negative consequences of stress is thus a joint result of the stressful experience and the individual's coping efforts combined. On this view high stress and poor coping would have the most serious consequences. By contrast, very low stress and very high coping levels would show the smallest degree of dysfunctional consequences whereas low stress, low coping and high stress-high coping combinations will be somewhere in the middle of the continuum.

In terms of support at work, as was previously stated, the probability of available support being used appears to be related to one's perception that such support is available. Organizations may therefore need to make concerted efforts towards making such support available and toward getting workers to perceive the work environment as supportive. Workers may benefit from refining their own abilities to recognize cues indicating support and from actively seeking support. In the work context, the main effects model of social support implies that stress management strategies should focus on both the reduction of role based stressors and on the augmentation of such positive factors as organizational and supervisory support.

Type A Behaviour Pattern in this study was associated with occupational status. Managers who scored high on the TABP also scored high on other variables that have been found to be correlated with TABP, for example high load,

time pressures, heightened responsibility, etc. TABP does not seem to be associated with any of the negative outcomes. In fact it showed negative associations with psychological and vocational strains. Perhaps future research should shift its focus away from an examination of TABP as a negative factor and stressor and toward treating it more like a role based response which may be positive in nature. There is also a need for longitudinal research for studying further the relationship between TABP and occupational roles with the same individuals as they advance on the occupational ladder. From a practical point of view, it appears that employees with TABP traits would be of great value to organizations that are devoted primarily to productivity and achievement. There is evidence from some studies, however, that these same individuals may contribute to their organization at some cost to their own mental and physical health.

Self-esteem also emerged as a significant correlate of stress, strain and coping in this study. Although some stress researchers have included self-esteem as a variable, it appears more studies need to examine the role of self-esteem as a potential outcome variable in stress research and as an antecedent of stress. Also, the role of high self-esteem in coping with stressors needs to be explored further in view of the findings of this research.

Findings of significant gender differences in the

experience of nonwork stress and nonwork outcomes on which females report higher scores on both has implications for sex-role research and in particular on the question, have the formal (legislative) interventions that are designed to promote equality in the work place been successful?

Working females who still carry the major burden of family life appear to focus more on their role as a family member than as a worker. This finding is consistent with Makosky's (1980) finding that women reported more life events than men and were affected more strongly by events they cannot control. Perhaps higher dual role-conflict and greater role burdens for women are reflected to a greater extent than for men in the nonwork domain in terms of higher interpersonal, psychological and physiological strain.

Differences in occupational status were highlighted in this study in terms of the nature of stressors, and of the type and degree of negative and positive outcomes. Researchers in the area of stress need to explore these differences further and organizations need to address these issues in the design of stress-prevention and stress management efforts. Future research in similar organizations needs to include technical or professional staff as a separate category in order to study stressors and strains especially relevant to the occupational demands of specialized professions.

The results of any research should be considered in the context of the sample used, as this may affect both the internal and external validity of the study. The sample for this study was drawn from a large bureaucratic organization with formal hierarchical structures and defined lines of authority. The subjects were all employed in white collar jobs, all in the same general work location.

There is a need for replication of this and similar studies with other samples of public sector employees in order to increase the generalizability of the present study results. The present sample was comprised primarily of employees who either attended stress management programs or groups of employees interested in becoming more aware of their stress situation. Although there was a normal distribution of scores with wide range on all of the stress variables, certain self-selection biases may be working which could minimize attending such sessions among those who do not experience too much strain, those who are too busy, or those who are frequently absent for whatever reasons. Much more work is needed to study different samples in different job settings to help improve our understanding of the relationships examined in the present study.

It is likely that the findings of this study are not relevant for such high stress occupations in the public

service, for example, the Air Traffic Controllers, Combat and Police Force personnel. The stressors encountered by such high risk job groups tend to be very intense, and can involve physical duress and danger, and should be included in a study of stress dealing with such occupations.

Given the possibility of a social desirability bias (even when complete anonymity was promised and ensured), the importance of including more objective performance, behavioral and biomedical indices of stress warrants strong consideration.

Further longitudinal field studies employing measurements at several points in time would greatly benefit the understanding of job stress employee health. This will help in the determination of some causal relationships which is difficult to do with cross-sectional research.

Footnotes

¹ The impact values in most cases are higher than the frequency count as the impact of each event ranges from +1 to +3 or -1 to -3 (only absolute values ignoring the sign were used).

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STATEMENT OF QUALIFICATIONS

Position No.:
 Group & Level: CK-4
 Title: Quality Assurance Clerk
 Branch: Planning and Program Management Branch
 Division: Immigration

Duties:

Under the direction of the Quality Assurance Supervisor maintains the integrity of the Immigration on-line FOSS and Batch systems; corrects errors reported on Computer Error lists; provides explanations, advice and direction to field offices and Headquarters components on completion of Immigration reporting documents and explanations of assessments in individual cases; provides reports and recommends corrective action in the reporting area of the Immigration Data System; performs other related duties.

ESSENTIAL QUALIFICATIONS**BASIC REQUIREMENTS****Education:**

Successful completion of secondary school education according to provincial standards of equivalency.

Language Requirement

Bilingual Non-Imperative
 PDB 193B

Experience:

Experience in the examining, verifying, editing and coding of statistical information.

RATED REQUIREMENTS**Knowledge**

Knowledge of the Immigration Act and Regulations and their application.

Knowledge of departmental policies with respect to Immigration.

Knowledge of the basic methods of reconciling audit trails.

Knowledge of various computer programs as they apply to the sub-systems involved in the interface of the Immigration Information Data system; as well as an understanding of pertinent codes, coding structures, error routines and reporting sequences.

Abilities:

Ability to maintain workflow.

Ability to examine and evaluate information; inspect and audit data.

Ability to maintain files and records.

Ability to correct errors and omissions and make recommendations.

Ability to prepare reports and charts.

Personal Suitability

Effective interpersonal relationships.

Alertness, initiative, thoroughness and diligence.

Comments:

STATEMENT OF QUALIFICATIONS

POSITION NO.
 GROUP AND LEVEL:
 TITLE: Case Review Officer
 BRANCH: Case Review
 DIVISION: Immigration

Reporting to the Chief, Area Bureaux, reviews, determines and interprets the Commission's position on complex or contentious immigration cases or groups of cases; provides technical expertise and functional guidance in all matters pertaining to immigration to the Minister, senior Commission officials, field officers and associates of other Departments; reviews and recommends appropriate action with respect to specialized operational procedures; participates in the development of policy, guidelines and legislation; develops and maintains effective working relationships with foreign government officials, members of federal, provincial and municipal governments, senior representatives of industry and national and international organizations, lawyers and the general public.

ESSENTIAL QUALIFICATIONSBASIC REQUIREMENTSEducation

Successful completion of secondary school.

Language - Bilingual (non-imperative).

Experience

Experience in applying several provisions of the Immigration Act and Regulations.

Experience in preparation of correspondence, reports and memoranda relating to the Immigration program.

Experience in liaising with officials of various levels of government and other agencies and organizations.

DETAILED REQUIREMENTSKnowledge

Knowledge of the Immigration Act and Regulations and other related legislation, such as the Charter of Rights, the Citizenship Act, the Criminal Code and the Narcotic Control Act.

Knowledge of decisions of the courts and Immigration Appeal Board impacting on the immigration program.

Knowledge of immigration program, policies and procedures.

Knowledge of the roles and responsibilities of the Department of External Affairs, Revenue Canada (Customs and Excise), the Department of the Solicitor General and Health and Welfare Canada in the administration of the immigration program.

Knowledge of Canadian and foreign socio-political conditions and domestic and international developments, which impact on immigration policies, procedures and individual cases.

Abilities

Ability to analyze complex or controversial immigration cases or groups of cases and reconcile the application of the law and policy with humanitarian, compassionate, political, economic and other considerations.

Ability to communicate effectively orally and in writing.

Ability to monitor and provide guidance and direction on the interpretation and application of the Immigration Act and Regulations, Immigration programs and procedures.

Ability to identify program areas that are in need of study or review and to liaise with policy and procedural areas as required.

Ability to identify cases of potential media interest and prepare appropriate response for Ministerial and Departmental consideration.

Ability to set priorities and schedule work ensuring deadlines are met.

PERSONAL SUITABILITY

Effective interpersonal skills, i.e., tact, discretion, cooperation.

Judgement, initiative, thoroughness, persuasiveness.

STATEMENT OF QUALIFICATIONSPosition Summary

Under the supervision of the Director General, Personnel Operations, develops, organizes, coordinates and directs the departmental program for the development of staffing policies and procedures, the provision of an integrated service of assistance and advice to Chiefs of staffing, senior management and senior Staffing officers, the development of innovative projects related to recruitment and selection, the development of standardized tests and other evaluation instruments, the preparation of reports and correspondence following ministerial enquiries, and, finally, the development and implementation of national programs for monitoring and evaluating staffing activities within the Commission and Department which employ more than 26,000 persons, in a number of categories and occupations, geographically distributed among headquarters and the 10 provinces; directs a staff of four staffing policy and evaluation consultants, one staffing development and research psychologist, one test development and research officer, one administrative and research assistant and three support clerks; acts as senior representative of the Commission/Department to the Public Service Commission in staffing matters and also to the staffing services of other departments.

ESSENTIAL QUALIFICATIONSBASIC REQUIREMENTSEducation

Successful completion of secondary school

Language Requirement

Bilingual Imperative CCCC/CCCC

Experience

Extensive experience in managing a staffing program in both an operational and corporate functional setting;

Experience in the management of policy development;

Experience in managing human and financial resources, including the preparation and control of budgets;

Experience in managing at least one other personnel specialty;

Experience in the management of a formal test development policy and program related to personnel selection;

Experience in managing the provision of consultation services to other staffing specialists.

RATED REQUIREMENTSKnowledge

Knowledge of governing legislation, directives, practices, policies governing staffing in the Public Service.

Knowledge of budgetary and management practices, principles and systems.

Abilities

Ability to plan, organize and direct the various functions of the Unit. KEY

Ability to effectively supervise staff. KEY

Ability to recommend and implement staffing policy, as required. KEY

Ability to communicate effectively orally and in writing. KEY

Ability to liaise effectively with central agencies to ensure departmental priorities are considered.

Ability to provide functional advice and guidance.

Personal Suitability

Effective interpersonal relations.

Initiative, judgement and persuasiveness.

Appendix D

Stress, Strain and coping

Introduction

Dear participant: This measurement package is part of the Counselling Services Division's attempt at systematically studying the phenomenon of stress in EIC. This package consists of two parts, designed to obtain data on different aspects of stress, as follows:

Part I: the incidence and levels of stress experienced by yourself, both in terms of significant job related events as well as on an ongoing basis; the incidence and degree of stress in your personal (non-job) life; and the relationship of job stress to your personal life stress.

Part II: the impact of the stress (strain) on yourself personally and on your feelings/attitudes towards the organization/your job as well as how well you are coping with the stress and strain.

We would ask you to complete Part I today. These questionnaires will take approximately 30 minutes to complete. Your individual scores will be provided to you, confidentially, at the beginning of the next session when we will also ask you to complete Part II.

Please provide the following particulars:

Age: ____ years

Sex: ☐ Male ☐ Female

Type of job: ____ Admin. support ____ Officer
(check one) ____ Supervisor ____ Manager (R.C. Manager)

How long with EIC: ____ years.

Today's date: _____

We thank you very much for your cooperation.

Appendix E

OCCUPATIONAL ENVIRONMENT SCALES, FORM E-2

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Marathon Consulting & Press
P. O. Box 09189
Columbus, Ohio 43209 - 0189

This measure is called the Occupational Environment Scales. It is designed to measure different kinds of stresses people experience in their work. On the answer sheet you'll notice that 5 stands for most of the time, and 1 for rarely. Read each statement and circle whichever of the five responses seems to fit you best for each statement. Notice that responses 2, 3, and 4 also have descriptive labels. Please be sure to respond to all 60 items, even if it is difficult to do so. Circle the most appropriate response.

Name _____
Employer _____ Job Title _____
Birth Date _____ Sex _____ Male _____ Female
Today's Date _____
How Long Employed in Present Work. _____ Years _____ Months

	Most of the Time	Usually	Often	Occasionally	Rarely or Never
	5	4	3	2	1
1 At work I am expected to do too many different tasks in too little time	5	4	3	2	1
2 I feel that my job responsibilities are increasing	5	4	3	2	1
3 I am expected to perform tasks on my job for which I have never been trained	5	4	3	2	1
4 I have to take work home with me	5	4	3	2	1
5 I have the resources I need to get my job done	5	4	3	2	1
6 I feel competent in what I do	5	4	3	2	1
7 I work under tight time deadlines	5	4	3	2	1
8 I wish that I had more help to deal with the demands placed upon me at work	5	4	3	2	1
9 My job requires me to work in several equally important areas at once	5	4	3	2	1
10 I am expected to do more work than is reasonable	5	4	3	2	1
11 I feel that my career is progressing about as I hoped it would	5	4	3	2	1
12 I feel that my job fits my skills and interests	5	4	3	2	1
13 I am bored with my job	5	4	3	2	1
14 I feel I have enough responsibility on my job	5	4	3	2	1
15 I feel my talents are being used on my job	5	4	3	2	1
16 I feel my job has a good future	5	4	3	2	1
17 I am able to satisfy my needs for success and recognition in my job	5	4	3	2	1
18 I feel overqualified for my job	5	4	3	2	1
19 I learn new skills in my work.	5	4	3	2	1
20 I have to perform tasks that are beneath my ability	5	4	3	2	1

REMEMBER—5 is most of the time, 4 is usually, 3 is often, 2 is occasionally, and 1 is rarely or never

21 My supervisor provides me with useful feedback about my performance	5	4	3	2	1
22 It is clear to me what I have to do to get ahead	5	4	3	2	1
23 I am uncertain about what I am supposed to accomplish in my work	5	4	3	2	1
24 When faced with several tasks I know which should be done first	5	4	3	2	1
25 I know where to begin a new project when it is assigned to me	5	4	3	2	1
26 My supervisor asks for one thing, but really wants another	5	4	3	2	1
27 I understand what is acceptable personal behavior on my job (e.g., dress, interpersonal relations, etc.)	5	4	3	2	1
28 The priorities of my job are clear to me	5	4	3	2	1
29 I have a clear understanding of how my boss wants me to spend my time	5	4	3	2	1
30 I know the basis on which I am evaluated	5	4	3	2	1
31 I feel conflict between what my employer expects me to do and what I think is right or proper	5	4	3	2	1
32 I feel caught between factions at work	5	4	3	2	1
33 I have more than one person telling me what to do	5	4	3	2	1
34 I feel I have a stake in the success of my employer (or enterprise)	5	4	3	2	1
35 I feel good about the work I do	5	4	3	2	1
36 My supervisors have conflicting ideas about what I should be doing	5	4	3	2	1
37 I am proud of what I do for a living	5	4	3	2	1
38 It is clear who really runs things where I work	5	4	3	2	1
39 I have divided loyalties on my job.	5	4	3	2	1
40 The work I do has as much payoff for me as for my employer	5	4	3	2	1
41 I feel I deal with more people during the day than I prefer	5	4	3	2	1

(OVER)

GENERAL EP- 5 is most of the time, 4 is usually, 3 is often, 2 is occasionally, and 1 is rarely or never

42 I spend time concerned with the problems others at work bring to me	5	4	3	2	1
43 I am responsible for the welfare of subordinates	5	4	3	2	1
44 People on the job look to me for leadership	5	4	3	2	1
45 I have on the job responsibility for the activities of others	5	4	3	2	1
46 I worry about whether the people who work for /with me will get things done properly	5	4	3	2	1
47 People who work for /with me are really hard to deal with	5	4	3	2	1
48 If I make a mistake in my work, the consequences for others can be pretty bad	5	4	3	2	1
49 My job demands that I handle an angry public	5	4	3	2	1
50 I like the people I work with	5	4	3	2	1
51 On my job I am exposed to high levels of noise	5	4	3	2	1
52 On my job I am exposed to high levels of wetness	5	4	3	2	1
53 On my job I am exposed to high levels of dust	5	4	3	2	1
54 On my job I am exposed to high temperatures	5	4	3	2	1
55 On my job I am exposed to bright light	5	4	3	2	1
56 On my job I am exposed to low temperatures	5	4	3	2	1
57 I have an erratic work schedule	5	4	3	2	1
58 On my job I am exposed to personal isolation	5	4	3	2	1
59 On my job I am exposed to unpleasant odors	5	4	3	2	1
60 On my job I am exposed to poisonous substances	5	4	3	2	1

THE WORK EXPERIENCES SURVEY

Listed below are many work related events that have been found to stimulate stress reactions in individuals. Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event. Be sure that all check marks are directly across from the items they correspond to.

Also for each item checked below, please indicate the extent to which you viewed the event as having either a positive or negative impact on you at the time the event occurred. That is, indicate the type and extent of impact the event had. A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

EVENT	0 to 1 6 mo. yr.		Extremely Negative -3	Moderately Negative -2	Slightly Negative -1	No Impact 0	Slightly Positive +1	Moderately Positive +2	Extremely Positive +3
1. Being transferred against my will to a new position or assignment.									
2. Being shelved (moved to a less important job).									
3. Experiencing a decrease in status (either actual or in relation to my peers.									
4. Being disciplined or seriously reprimanded by my supervisor. . .									
5. Having my request to transfer to a new, more satisfying job rejected.									
6. Sustaining a sudden, significant change in the nature of my work .									
7. Learning of the cancellation of a project I was involved with and considered important.									

EVENT	0 to 1 6 mo. yr.		Extremely Negative	Moderately Negative	Slightly Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive
			-3	-2	-1	0	+1	+2	+3
8. Encountering major or frequent changes in instructions, policies or practices									
9. Being promoted or advanced at a slower rate than I expected . . .									
10. Being transferred voluntarily to a new position or assignment (not a promotion)									
11. Anticipating my own imminent retirement.									
12. Undergoing a major reorganization (at least throughout the directorate									
13. Experiencing a sudden decrease in the number of positive recognitions of my accomplishments from any source.									
14. Encountering a major change (increase or decrease) in the technology affecting my job (computers, techniques, and so on).									
15. Giving a major briefing or formal presentation									
16. Encountering a significant deterioration in environmental conditions (lighting, noise, temperature, space, and so on). .									
17. Acquiring a new boss or supervisor									

EVENT	0 to 1 6 mo. yr.	Extremely Negative -3	Moderately Negative -2	Slightly Negative -1	No Impact 0	Slightly Positive +1	Moderately Positive +2	Extremely Positive +3
18. Sustaining a sudden, significant decrease in the activity level or pace of my work								
19. Sustaining a sudden, significant increase in the activity level or pace of my work								
20. Undergoing a major relocation of my work place.								
21. Experiencing an increase in status (either actual or in relation to my peers)								
22. Being required to work more hours per week than normal due to crises or deadlines.								
23. Experiencing the transfer, resignation, termination, or retirement of a close friend or valued colleague.								
24. Being promoted or advanced at a faster rate than I expected . . .								
25. Acquiring new co-workers.								
26. Encountering a major change in my work schedule.								
27. Experiencing an increase in the number of positive recognitions of my accomplishments (from any source)								
28. Encountering a significant improvement in environmental conditions (lighting, noise, temperature, space, and so on). .								

EVENT	0 to 1		Extremely Negative	Moderately Negative	Slightly Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive
	6 mo.	1 yr.	-3	-2	-1	0	+1	+2	+3
29. Undergoing a minor relocation of my work place.									
30. Being evaluated									
31. Getting an evaluation rating below my expectations									

The Hassels Scale

Directions: Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times.

Listed in the centre of the following pages are a number of ways in which a person can feel hassled. First, circle the hassles that have happened to you in the past month. Then look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month. If a hassle did not occur in the last month do NOT circle it.

SEVERITY			
	1. Somewhat severe		
	2. Moderately severe		
	3. Extremely severe		
(1) Misplacing or losing things	1	2	3
(2) Troublesome neighbours	1	2	3
(3) Social obligations	1	2	3
(4) Inconsiderate smokers	1	2	3
(5) Troubling thoughts about your future	1	2	3
(6) Thoughts about death	1	2	3
(7) Health of a family member	1	2	3
(8) Not enough money for clothing	1	2	3
(9) Not enough money for housing	1	2	3
(10) Concerns about owing money	1	2	3
(11) Concerns about getting credit	1	2	3
(12) Concerns about money for emergencies	1	2	3
(13) Someone owes you money	1	2	3
(14) Financial responsibility for someone who doesn't live with you	1	2	3
(15) Cutting down on electricity, water, etc.....	1	2	3
(16) Smoking too much	1	2	3
(17) Use of alcohol	1	2	3
(18) Personal use of drugs	1	2	3
(19) Too many responsibilities	1	2	3
(20) Decisions about having children	1	2	3
(21) Non-family members living in your house	1	2	3
(22) Care for pet	1	2	3
(23) Planning meals	1	2	3
(24) Concerned about the meaning of life	1	2	3
(25) Trouble relaxing	1	2	3

SEVERITY

1. Somewhat severe
2. Moderately severe
3. Extremely severe

(26) Trouble making decisions	1	2	3
(27) Home maintenance	1	2	3
(28) Not enough money for basic necessities	1	2	3
(29) Not enough money for food	1	2	3
(30) Too many interruptions	1	2	3
(31) Unexpected company	1	2	3
(32) Too much time on hands	1	2	3
(33) Having to wait	1	2	3
(34) Concerns about accidents	1	2	3
(35) Being lonely	1	2	3
(36) Not enough money for health care	1	2	3
(37) Fear of confrontation	1	2	3
(38) Financial security	1	2	3
(39) Silly practical mistakes	1	2	3
(40) Inability to express yourself	1	2	3
(41) Physical illness	1	2	3
(42) Side effects of medication	1	2	3
(43) Concerns about medical treatment	1	2	3
(44) Physical appearance	1	2	3
(45) Fear of rejection	1	2	3
(46) Difficulties with getting pregnant	1	2	3
(47) Sexual problems that result from physical problems	1	2	3
(48) Sexual problems other than those resulting from physical problems	1	2	3
(49) Concerns about health in general	1	2	3
(50) Not seeing enough people	1	2	3
(51) Friends or relatives too far away	1	2	3
(52) Preparing meals	1	2	3
(53) Wasting time	1	2	3
(54) Auto maintenance	1	2	3
(55) Filling out forms	1	2	3
(56) Neighborhood deterioration	1	2	3
(57) Financing children's education	1	2	3
(58) Declining physical abilities	1	2	3
(59) Concerns about bodily functions	1	2	3
(60) Rising prices of common goods	1	2	3
(61) Not getting enough rest	1	2	3
(62) Not getting enough sleep	1	2	3
(63) Problem with aging parents	1	2	3
(64) Problems with your children	1	2	3
(65) Problems with persons younger than yourself	1	2	3

SEVERITY

1. Somewhat severe
2. Moderately severe
3. Extremely severe

(66) Problems with your lover	1	2	3
(67) Difficulties seeing or hearing	1	2	3
(68) Overloaded with family responsibilities	1	2	3
(69) Too many things to do	1	2	3
(70) Concerns about meeting high standards	1	2	3
(71) Financial dealings with friends or acquaintances.	1	2	3
(72) Trouble with reading, writing, or spelling abilities	1	2	3
(73) Problems with divorce or separation	1	2	3
(74) Trouble with arithmetic skills	1	2	3
(75) Gossip	1	2	3
(76) Legal problems	1	2	3
(77) Concerns about weight	1	2	3
(78) Not enough time to do the things you need to do .	1	2	3
(79) Television	1	2	3
(80) Not enough personal energy	1	2	3
(81) Concerns about inner conflicts	1	2	3
(82) Feel conflicted over what to do	1	2	3
(83) Regrets over past decisions	1	2	3
(84) Menstrual (period) problems	1	2	3
(85) The weather	1	2	3
(86) Nightmares	1	2	3
(87) Difficulties with friends	1	2	3
(88) Not enough time for family	1	2	3
(89) Transportation problems	1	2	3
(90) Not enough money for transportation	1	2	3
(91) Not enough money for entertainment and recreation	1	2	3
(92) Shopping	1	2	3
(93) Prejudice and discrimination from others	1	2	3
(94) Property, investments or taxes	1	2	3
(95) Not enough time for entertainment and recreation	1	2	3
(96) Concerns about news events	1	2	3
(97) Noise	1	2	3
(98) Crime	1	2	3
(99) Traffic	1	2	3
(100) Pollution	1	2	3

HAVE WE MISSED ANY OF YOUR HASSLES? IF SO, WRITE
THEM IN BELOW:

_____	1	2	3
_____	1	2	3
_____	1	2	3

Also, for each item checked below, please indicate the extent to which you viewed the event as having either a positive or negative impact on your life at the time the event occurred. That is, indicate the type and extent of impact that the event had. A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

[illegible]

4 of /de 4

MICROD

Stress Strain and Coping

Introduction

Instructions:

Today you will be completing Part II of the measurement package. These questionnaires are aimed at measuring the degree of strain you are experiencing, how this strain is affecting your feelings and attitudes towards the organization; and how well and through what methods you are coping with the stress and strain. It will take approximately 25 minutes to complete these questionnaires.

Your scores on these two parts will be ready in a week's time and will be available in the Counselling office (Room 332 - Phase IV) in sealed envelopes under the identification number on your package (i.e. S10, S16 - from the top right hand corner). You will need to remember this number. Also, you may want to confirm before coming to pick up by calling the Counselling office at 994-2918.

Once again, we appreciate your cooperation.

Appendix J

PERSONAL STRAIN QUESTIONNAIRE, FORM E-2

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**Marathon Consulting & Press
P. O. Box 09189
Columbus, Ohio 43209 - 0189**

This instrument is called the Personal Strain Questionnaire. It is designed to measure different kinds of strains people experience in their lives. On the answer sheet you'll notice that 5 stands for most of the time, and 1 for rarely. Read each statement and circle whichever of the five responses describes you best for each statement. Notice that responses 2, 3, and 4 also have descriptive labels. Please be sure to respond to all 40 items, even if it is difficult to do so. Circle the most appropriate response.

Name: _____
Employer: _____ Job Title: _____
Birth Date: _____ Sex: _____ Male _____ Female
Today's Date: _____
How Long Employed in Present Work: _____ Years _____ Months

	Most of the Time	Usually	Often	Occasionally	Rarely or Never
	5	4	3	2	1
1. I don't seem to be able to get much done at work	5	4	3	2	1
2. I dread going to work, lately	5	4	3	2	1
3. I am bored with my work	5	4	3	2	1
4. I find myself getting behind in my work, lately	5	4	3	2	1
5. I have accidents on the job of late	5	4	3	2	1
6. The quality of my work is good.	5	4	3	2	1
7. Recently, I have been absent from work.	5	4	3	2	1
8. I find my work interesting and/or exciting.	5	4	3	2	1
9. I can concentrate on the things I need to at work	5	4	3	2	1
10. I make errors or mistakes in my work.	5	4	3	2	1
11. Lately, I am easily irritated.	5	4	3	2	1
12. Lately, I have been depressed	5	4	3	2	1
13. Lately, I have been feeling anxious.	5	4	3	2	1
14. I have been happy, lately.	5	4	3	2	1
15. So many thoughts run through my head at night that I have trouble falling asleep.	5	4	3	2	1
16. Lately, I respond badly in situations that normally wouldn't bother me.	5	4	3	2	1
17. I find myself complaining about little things.	5	4	3	2	1
18. Lately, I have been worrying.	5	4	3	2	1
19. I have a good sense of humor.	5	4	3	2	1

REMEMBER—5 is most of the time, 4 is usually, 3 is often, 2 is occasionally, and 1 is rarely or never

20	Things are going about as they should	5	4	3	2	1
21	I wish I had more time to spend with close friends	5	4	3	2	1
22	I quarrel with my spouse	5	4	3	2	1
23	I quarrel with my friends	5	4	3	2	1
24	My spouse and I are happy together	5	4	3	2	1
25	Lately, I do things by myself instead of with other people	5	4	3	2	1
26	I quarrel with members of the family.	5	4	3	2	1
27	Lately, my relationships with people are good.	5	4	3	2	1
28	I find that I need time to myself to work out my problems.	5	4	3	2	1
29	I wish I had more time to spend by myself.	5	4	3	2	1
30	I have been withdrawing from people lately.	5	4	3	2	1
31	I have unplanned weight gains.	5	4	3	2	1
32	My eating habits are erratic	5	4	3	2	1
33	I find myself drinking a lot lately.	5	4	3	2	1
34	Lately, I have been tired.	5	4	3	2	1
35	I have been feeling tense	5	4	3	2	1
36	I have trouble falling and staying asleep.	5	4	3	2	1
37	I have aches and pains I can not explain.	5	4	3	2	1
38	I eat the wrong foods.	5	4	3	2	1
39	I feel apathetic	5	4	3	2	1
40	I feel lethargic.	5	4	3	2	1

Appendix K

Type A Behavior Pattern at Work

Please indicate how true each of the following statements is of you by circling the appropriate numbers on the scale provided with each item. Answer as quickly as you can, it is your first impressions that are most important.

a. Sometimes I feel I shouldn't be working so hard, but something drives me on.	<div style="display: flex; justify-content: space-between; padding: 0 10px;"> 0123456 </div> <div style="display: flex; justify-content: space-between; padding: 0 10px;"> Not at
all true
of meVery
true
of me </div>
b. I thrive on challenging situations, the more challenges the better.	0123456
c. In comparison to most people I know I'm very involved in my work.	0123456
d. It seems as if I need thirty hours a day to finish all the things I'm faced with.	0123456
e. I have often been asked to be the project officer/ task force member of some group or groups.	0123456

Appendix L
Self Esteem at Work

Here are some words and phrases describing people's perception of themselves in their work situations. Answer these by circling the number which best describes how you see yourself in your work.

a. Successful	6	5	4	3	2	1	0	Not Successful
b. Important	6	5	4	3	2	1	0	Not Important
c. Do my best	6	5	4	3	2	1	0	Not doing my best
d. Happy	6	5	4	3	2	1	0	Sad

Social Support at Work

Please answer the following questions by circling the appropriate number on the scale provided with each item.

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

	Not at all	A little	Some- what	Very much	
A. Your immediate supervisor	0	1	2	3	
B. Other people at work	0	1	2	3	
C. Your spouse	0	1	2	3	Not married
D. Your friends and relatives	0	1	2	3	

How much is each of the following people willing to listen to your work-related problems?

	Not at all	A little	Some- what	Very much	
A. Your immediate supervisor	0	1	2	3	
B. Other people at work	0	1	2	3	
C. Your spouse	0	1	2	3	Not married
D. Your friends and relatives	0	1	2	3	

How much is each of the following people helpful to you in getting your job done?

A. Your immediate supervisor	0	1	2	3
B. Other people at work	0	1	2	3

Please indicate how true each of the following statements is of your immediate supervisor.

My supervisor is <u>competent</u> in doing (his/her) job.	0	1	2	3
My supervisor is <u>very concerned</u> about the welfare of those under him.	0	1	2	3
My supervisor goes out of his/her way to <u>praise</u> good work.	0	1	2	3

Job Satisfaction

The following questions are included to tap your reactions/feelings towards your job. Indicate your response by circling the number beside the response alternative of your choice.

All in all, how satisfied would you say you are with your job?

- 5 - Very satisfied
- 3 - Somewhat satisfied
- 1 - Not too satisfied
- 1 - Not at all satisfied

If you were to go into any type of job you wanted, what would your choice be?

- 5 - Would want the job I have now
- 1 - Would want to retire and not work at all
- 1 - Would prefer some other job to the job I have now

Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide?

- 5 - Decide without hesitation to take the same job
- 3 - Have second thoughts
- 1 - Decide definitely not to take the same job

In general how well would you say that your job measures up to the sort of job you wanted when you took it?

- 5 - Very much like the job I wanted
- 3 - Somewhat like the job I wanted
- 1 - Not very much like the job I wanted

If a good friend of yours told you he or she was interested in working in a job like yours, what would you tell him or her?

- 5 - Would strongly recommend it
- 3 - Would have doubts about recommending it
- 1 - Would advise the friend against it.

Organizational Commitment

Listed below are 15 statements designed to get an idea of employees' commitment to the organization they work for.

Indicate your response by circling the number which best represents your choice for each of the statement. By organization, we mean EIC.

Strongly Disagree	Moderately Disagree	Slightly disagree	Neither disagree nor agree	Slightly Agree	Moderately Agree	Strongly Agree
----------------------	------------------------	----------------------	----------------------------------	-------------------	---------------------	-------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---

I talk up this organization to my friends as a great organization to work for.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

I feel very little loyalty to this organization.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

I would accept almost any type of job assignment in order to keep working for this organization.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

I find that my values and the organization's values are very similar	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

I am proud to tell others that I am part of this organization.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

I could just as well be working for a different organization as long as the type of work were similar.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

This organization really inspires the very best in me in the way of job performance.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

It would take very little change in my present circumstances to cause me to leave this organization.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither disagree nor agree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.

1 2 3 4 5 6 7

There's not too much to be gained by sticking with this organization indefinitely.

1 2 3 4 5 6 7

Often, I find it difficult to agree with this organization's policies on important matters relating to its employees.

1 2 3 4 5 6 7

I really care about the fate of this organization.

1 2 3 4 5 6 7

For me this is the best of all possible organizations for which to work in.

1 2 3 4 5 6 7

Deciding to work for this organization was a definite mistake on my part.

1 2 3 4 5 6 7

Appendix P

PERSONAL RESOURCES QUESTIONNAIRE, FORM E-2

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**Marathon Consulting & Press
P. O. Box 08188
Columbus, Ohio 43208 - 0188**

This instrument is called the Personal Resources Questionnaire. It is designed to measure the extent to which resources are available to people to counteract the effects of occupational stress. On the answer sheet you'll notice that 5 stands for most of the time, and 1 for rarely. Read each statement and circle whichever of the five responses seems to fit you best for each statement. Notice that responses 2, 3, and 4 also have descriptive labels. Please be sure to respond to all 40 items, even if it is difficult to do so. Circle the most appropriate response.

Name: _____

Employer: _____ Job Title: _____

Birth Date: _____ Sex: _____ Male _____ Female

Today's Date: _____

How Long Employed in Present Work: _____ Years _____ Months

	Most of the Time	Usually	Often	Occasionally	Rarely or Never
	5	4	3	2	1
1. When I need a vacation I take one.	5	4	3	2	1
2. I am able to do what I want to do in my free time.	5	4	3	2	1
3. On weekends I spend time doing the things I enjoy most.	5	4	3	2	1
4. Lately, my main recreational activity is watching television.	5	4	3	2	1
5. A lot of my free time is spent attending performances (e.g., sporting events, theater, movies, concerts, etc.).	5	4	3	2	1
6. I spend a lot of my free time in participant activities (e.g., sports, music, painting, woodworking, sewing, etc.).	5	4	3	2	1
7. I spend a lot of my time in community activities (e.g., scouts, religious, school, local, government, etc.).	5	4	3	2	1
8. I find engaging in recreational activities relaxing.	5	4	3	2	1
9. I spend enough time in recreational activities to satisfy my needs.	5	4	3	2	1
10. I spend a lot of my free time on hobbies (e.g., collections of various kinds, etc.).	5	4	3	2	1
11. I am careful about my diet (e.g., eating regularly, moderately, and with good nutrition in mind).	5	4	3	2	1
12. I get regular physical checkups.	5	4	3	2	1
13. I avoid excessive use of alcohol.	5	4	3	2	1
14. I exercise regularly (at least 20 minutes most days).	5	4	3	2	1
15. I practice "relaxation" techniques.	5	4	3	2	1
16. I get the sleep I need.	5	4	3	2	1
17. I avoid eating or drinking things I know are unhealthy (e.g., coffee, tea, cigarettes, etc.).	5	4	3	2	1
18. I engage in meditation.	5	4	3	2	1
19. I practice deep breathing exercises a few minutes several times each day.	5	4	3	2	1

REMEMBER—5 is *most of the time*, 4 is *usually*, 3 is *often*, 2 is *occasionally*, and 1 is *rarely or never*.

20. I set aside time to do the things I really enjoy.	5	4	3	2	1
21. There is at least one person important to me who values me.	5	4	3	2	1
22. I have help with tasks around the house.	5	4	3	2	1
23. I have help with the important things that have to be done.	5	4	3	2	1
24. There is at least one sympathetic person with whom I can discuss my concerns.	5	4	3	2	1
25. There is at least one sympathetic person with whom I can discuss my work problems.	5	4	3	2	1
26. I feel I have at least one good friend I can count on.	5	4	3	2	1
27. I feel loved	5	4	3	2	1
28. There is a person with whom I feel really close.	5	4	3	2	1
29. I have a circle of friends who value me.	5	4	3	2	1
30. I gain personal benefit from participation in formal social groups (e.g., religious, political, professional organizations, etc.).	5	4	3	2	1
31. I am able to put my job out of my mind when I go home.	5	4	3	2	1
32. I feel that there are other jobs I could do besides my current one.	5	4	3	2	1
33. I periodically re-examine or reorganize my work style and schedule.	5	4	3	2	1
34. I can establish priorities for the use of my time.	5	4	3	2	1
35. Once they are set, I am able to stick to my priorities.	5	4	3	2	1
36. I have techniques to help avoid being distracted.	5	4	3	2	1
37. I can identify important elements of problems I encounter.	5	4	3	2	1
38. When faced with a problem I use a systematic approach.	5	4	3	2	1
39. When faced with the need to make a decision I try to think through the consequences of choices I might make.	5	4	3	2	1
40. I try to keep aware of important ways I behave and things I do.	5	4	3	2	1

Appendix Q

Descriptive Statistics for each Variable

VARIABLE	MEAN	STANDARD DEVIATION	COEFFICIENT OF VARIATION	SMALLEST VALUE	SMALLEST SCORE	FIRST CASE FOR SMALLEST	LARGEST VALUE	LARGEST SCORE	FIRST CASE FOR LARGEST
4 AGE	37.74286	8.36190	.221549	21.0000	-2.09	22	63.0000	3.02	169
5 SEX	1.48571	.50082	.337090	1.0000	-1.97	3	3.0000	1.03	1
6 OCCUP	2.01224	.78658	.390895	1.0000	-1.51	89	3.0000	1.26	1
7 TENURE	10.98776	6.2416	.603778	1.0000	-1.51	89	32.0000	1.37	249
8 LOAD	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
9 INSUFF	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
10 AMBIG	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
11 CONF	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
12 RESP	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
13 STRESS	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
14 SEVERITY	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
15 VOCSTR	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
16 INTERSTR	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
17 PHYSTRAIN	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
18 JOBSAT	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
19 ORCOM	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
20 EVENETS	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
21 TIMEONE	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
22 COPING	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
23 SUPPORT	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
24 TYPEA	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
25 SELF CARE	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
26 SUPPORT	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
27 MEVENTS	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
28 SIXMONTH	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
29 ONEYEAR	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
30 ALLEVEN	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
31 ALLEVEN	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
32 ALLEVEN	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
33 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
34 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
35 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
36 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
37 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
38 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
39 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
40 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
41 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
42 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
43 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253
44 POSNMEV	23.44490	7.00705	.297334	12.0000	-1.97	107	46.0000	2.20	253

CASE NUMBERS ABOVE REFER TO DATA MATRIX BEFORE ANY CASES
HAVE BEEN DELETED DUE TO MISSING DATA.
CASES WITH ZERO WEIGHTS ARE NOT INCLUDED.

NEONWFV	43	NEONWFV	43
NWSUPP	44	NWSUPP	44
	1.000		1.000
	-0.094		-0.094

Appendix S Unrotated Factor Loadings (Pattern)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
AGE	-0.130	-0.073	0.213	0.170	0.554	-0.127	-0.283	0.194	0.083	0.223
SEX	-0.088	-0.143	0.258	0.408	0.155	-0.062	-0.204	0.177	0.287	-0.078
OCCUP	-0.192	-0.133	0.123	0.487	0.155	-0.201	0.120	0.072	0.085	-0.244
TENURE	-0.099	-0.105	0.141	0.374	0.504	-0.215	0.344	0.245	0.208	-0.032
LOAD	0.597	-0.187	0.120	-0.461	-0.245	-0.044	-0.110	-0.087	-0.104	-0.013
INSUFF	0.557	-0.100	0.208	-0.292	-0.045	-0.142	0.141	-0.034	-0.058	-0.108
AMBIO	0.554	-0.252	0.208	0.205	-0.118	0.094	0.274	-0.011	-0.037	-0.154
CONF	0.481	0.144	0.227	0.047	-0.137	0.033	0.025	0.074	0.001	-0.027
PERFNU	0.383	0.227	0.178	0.031	-0.322	-0.043	0.065	0.077	-0.027	-0.017
STRESS	0.747	-0.127	0.189	-0.321	0.307	-0.044	0.194	-0.079	0.017	-0.105
HABIT	0.472	0.344	0.123	0.107	0.047	-0.228	0.138	0.055	0.110	-0.145
NECESSITY	0.727	0.102	0.178	-0.087	0.094	-0.173	0.141	-0.044	-0.050	-0.151
SECURITY	0.514	0.198	0.220	0.062	-0.076	0.131	0.125	0.088	0.050	-0.041
PHYSTR	0.453	0.123	0.244	0.053	-0.122	-0.144	0.039	0.174	-0.188	-0.140
PHYSIC	0.533	0.355	0.271	0.077	-0.063	-0.169	0.145	0.031	-0.232	-0.110
JOB	0.535	0.274	0.173	0.077	0.049	-0.111	0.035	0.235	0.070	-0.233
ORCON	0.532	0.274	0.173	0.077	0.049	-0.111	0.035	0.235	0.070	-0.233
EVENTS	0.532	0.274	0.173	0.077	0.049	-0.111	0.035	0.235	0.070	-0.233
TIME	0.317	0.544	0.024	0.254	-0.114	-0.008	0.210	0.107	-0.258	0.004
TIME TWO	0.317	0.544	0.024	0.254	-0.114	-0.008	0.210	0.107	-0.258	0.004
COPING	0.397	0.205	0.404	0.158	0.052	0.324	0.124	0.040	-0.258	0.004
SUPPORT	0.397	0.205	0.404	0.158	0.052	0.324	0.124	0.040	-0.258	0.004
CRUPORT	0.397	0.205	0.404	0.158	0.052	0.324	0.124	0.040	-0.258	0.004
ESTEE	0.397	0.205	0.404	0.158	0.052	0.324	0.124	0.040	-0.258	0.004
TYPEA	0.094	0.342	0.093	0.174	-0.130	-0.073	0.132	0.231	-0.029	-0.228
REC	0.114	0.144	0.202	0.441	0.123	-0.109	0.154	0.233	-0.041	-0.059
SELF CARE	0.250	0.144	0.202	0.441	0.123	-0.109	0.154	0.233	-0.041	-0.059
SUPPORT	0.422	0.144	0.202	0.441	0.123	-0.109	0.154	0.233	-0.041	-0.059
RAYCOS	0.179	0.179	0.406	-0.239	0.342	-0.277	0.063	0.343	-0.148	0.123
WVVENTH	0.419	0.277	0.430	-0.074	-0.072	-0.043	0.043	0.244	-0.107	-0.057
SYXMONTH	0.419	0.277	0.430	-0.074	-0.072	-0.043	0.043	0.244	-0.107	-0.057
ONE YEAR	0.419	0.277	0.430	-0.074	-0.072	-0.043	0.043	0.244	-0.107	-0.057
ATTEN	0.207	0.274	0.128	0.149	0.254	0.452	0.288	0.015	-0.201	-0.201
POSNOEV	0.114	0.106	0.018	0.302	0.353	0.185	0.145	0.049	-0.070	-0.240
NEGNOEV	0.433	0.457	0.444	-0.046	-0.046	0.447	0.039	0.096	-0.071	-0.144
POSNOEV	0.140	0.543	0.135	-0.031	-0.040	0.219	0.039	0.102	-0.163	-0.144
NEGNOEV	0.140	0.543	0.135	-0.031	-0.040	0.219	0.039	0.102	-0.163	-0.144
POSNOEV	-0.158	0.088	-0.179	-0.117	-0.072	-0.073	0.102	-0.054	-0.012	-0.240
UP	9.182	9.576	3.288	2.878	2.123	1.752	1.423	1.298	1.220	1.087

THE UP FOR EACH FACTOR IS THE SUM OF THE SQUARES OF THE ELEMENTS OF THE COLUMN OF THE FACTOR LOADING MATRIX CORRESPONDING TO THAT FACTOR. THE UP IS THE VARIANCE EXPLAINED BY THE FACTOR.

Appendix T

Sorted Rotated Factor Loadings (Pattern)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
11	0.813	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19	0.793	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
22	-0.793	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14	0.775	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
17	0.701	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.335	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28	-0.574	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.290
23	-0.541	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.247	0.000
33	0.538	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
43	0.000	0.357	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.735
24	0.000	0.741	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16	0.000	0.677	0.000	0.000	0.000	0.000	0.519	0.000	0.000	0.278
15	0.000	0.454	0.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21	0.378	0.000	0.801	-0.279	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.742	-0.279	0.000	0.000	0.000	0.000	0.000	0.000
19	0.427	0.000	0.448	-0.280	0.000	0.000	0.000	0.000	0.000	0.000
27	0.000	0.000	0.349	0.000	0.000	0.000	0.000	0.000	0.000	0.314
23	0.000	0.000	0.000	0.873	0.000	0.000	0.000	0.000	0.314	0.000
33	0.000	0.000	0.000	0.770	0.000	0.000	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.715	0.000	0.000	0.000	0.000	0.000	0.000
32	0.000	0.000	-0.313	0.448	0.000	0.000	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000	0.705	0.000	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000	0.851	0.000	0.000	0.000	0.000	0.000
41	0.484	0.000	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.748	0.000	0.000	0.000	0.000
31	0.000	0.000	0.000	0.000	0.000	0.711	0.000	0.000	0.000	0.000
4	0.000	0.000	-0.253	0.000	0.000	0.525	-0.253	0.000	0.000	0.000
42	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000
25	0.000	0.511	0.000	0.000	0.000	0.000	0.683	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	0.000	0.000	-0.287	0.000	0.000	0.000	0.000	0.787	0.000	0.000
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.524	0.000	0.000
44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
34	0.000	0.000	0.000	0.412	0.000	0.000	0.000	0.000	0.742	0.000
29	-0.242	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.701	0.000
54	0.686	0.543	0.000	0.000	0.000	0.000	0.000	0.000	0.535	0.000
38	0.000	0.000	0.000	0.000	0.391	0.000	0.000	0.000	0.000	0.472
13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	-0.471	0.000	0.000	0.000	0.458	0.000	0.148	0.000	0.000	0.415
VP	5.906	3.382	3.243	3.074	2.845	2.787	2.152	2.039	1.818	1.478

THE ABOVE FACTOR LOADING MATRIX HAS BEEN REARRANGED SO THAT THE COLUMNS APPEAR IN DECREASING ORDER OF VARIANCE EXPLAINED BY FACTORS. THE ROWS HAVE BEEN REARRANGED SO THAT FOR EACH SUCCESSIVE FACTOR, LOADINGS GREATER

THAN .5000 APPEAR FIRST. LOADINGS LESS THAN .2500 HAVE BEEN REPLACED BY ZERO.

APPENDIX U

COMPARISON OF MEDIAN SOCRES OF THIS STUDY WITH NORMATIVE SAMPLE

<u>STRESS Subscales</u>	<u>Osipow & Spokane (1985)</u> <u>(Medians)</u>		<u>Present Study</u> <u>(Medians)</u>	
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>
Role load	25	23	26	25
Role Insufficiency	28	27	28	29
Role Ambiguity	23	19	24	23
Role Boundary	24	22	24	23
Responsibility for others	22	24	24	22
Physical Environment	15	17	16	17
 <u>STRAIN Subscales</u>				
Vocational Strain	18	19	20	20
Psychological Strain	19	22	23	24
Interpersonal Strain	20	20	19	21
Physical Strain	14	20	19	22
 <u>COPING Subscales</u>				
Recreation	29	28	25	26
Selfcare	26	26	27	25
Support	43	42	35	34
Rational/Cognitive	38	37	37	37

END

16/02/90

FIN